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ABSTRACT

Designed to supplement the mathematics-science curriculum, this booklet contains activities which provide children of K-1 grade levels with opportunities for developing mathematics and science skills in experiential ways. Twenty mathematics skills and nine science process skills are listed and indexed for the 15 activities which are seasonally based and focus on spring. Each activity consists of student sheets and a teacher's guide. The teacher's guide contains information on the activities including: (1) topic area; (2) introductory statement; (3) math and science skills; (4) required materials; (5) key questions; (6) background information; (7) management details; (8) instructional procedures (9) student procedures; (10) discussion questions; (11) activity extensions; and (12) curriculum coordinates. (ML)

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SPRING INTO MATH and SCIENCE

K-1

Book 3

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PROJECT AIMS

Spring Into Math and Science

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Project AIMS

Project AIMS has as its purpose the integration of subject matter in K-9. Such integration enriches and makes learning meaningful and holistic. Project AIMS began as a program to integrate mathematics and science, but has since developed to also include language arts, social studies, and other disciplines. The acronym "AIMS" stands for "activities to integrate mathematics and science."

Project AIMS is a continuing, non-profit project of Fresno Pacific College. It had its inception in a National Science Foundation funded program to train teachers in the integration of mathematics and science. This quickly created the necessity to write instructional materials incorporating this concept. Despite the fact that thoughtful educators have long recommended this approach, very little appropriate material was available.

Currently, Project AIMS is funded solely through the sale of this developing series of books. All net proceeds from their sale flow into a trust fund administered by Fresno Pacific College. The use of this fund is restricted to the support of continued research and development, partial scholarships for classroom teachers who participate in the writing and field testing teams, and the publication of the books.

Two writing teams have completed their work. The first consisted of seventy-five teachers in grades 5-9 who met over a period of eighteen months. The second involved thirty-five K-4 teachers who wrote during a two-year span. In the fall of 1985 a third team of approximately fifty teachers in grades 2-9 will begin writing. In addition, over a hundred teachers have been involved in field testing newly created materials.

The rationale for this integrative thrust lies in the fact that science, mathematics, language arts, social studies, etc., are integrally interwoven in the real world outside the classroom, from which it follows that they should be similarly treated in the classroom if we are to prepare our students for life in that world. Teachers who have used Project AIMS lessons give enthusiastic endorsement to the effectiveness of this approach.

Science encompasses the art of questioning, investigating, hypothesizing, and discovering. Mathematics is the language that provides clarity, objectivity, and understanding. The language arts provide us with powerful tools of communication. Many of the major contemporary issues involve societal issues stemming from advancements in science. It is time, therefore, that all of us in the teaching profession take seriously using a more holistic mode of transmitting knowledge to students. It is this that motivates all of us who are involved in creating or using the integrative materials of Project AIMS. We invite you to join us in this effort.

Extensive field testing of these materials confirms the following beneficial results.

1. Mathematics becomes more meaningful, hence more useful, when it is applied to situations that interest students.

2. The extent to which science is studied and understood is increased, with a significant economy of time resulting from the integration of two or more disciplines.

3. There is improved quality of learning and retention, supporting the thesis that learning which is meaningful and relevant is more effective.

4. Motivation and involvement are increased dramatically as students investigate real world situations and participate actively in the process.

We invite you to become part of this classroom teacher movement by using an integrated approach and by sharing any suggestions you may have or investigations you would recommend. Project AIMS welcomes you!

Project AIMS Publications

GRADES 5-9 SERIES

Math + Science, A Solution
The Sky's the Limit
From Head to Toe
Fun With Foods
Floaters and Sinkers
Down to Earth
Our Wonderful World
Pieces and Patterns, A Patchwork in Math and Science
Out of This World, Book A

GRADES K-4 SERIES

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Glide Into Winter With Math and Science
Spring Into Math and Science
Seasoning Math and Science, Book A (Fall and Winter)
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I HEAR, AND I FORGET
I SEE; AND I REMEMBER
I DO, AND I UNDERSTAND.

-Chinese Proverb

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Introduction

Spring into math and science! This book is filled with bunnies, rainbows, leprechauns, animal crackers, fruit floats and eggsplorations—investigations to fill your spring days. Let this book be a "springboard" for further developing your curriculum.

The Project AIMS series for K-1 is based on seasons to make it convenient for you to incorporate these investigations into your present curriculum. Because of the peak learning experiences you will present to your students, they will "spring into action" when it comes to math and science.

This series is not designed with a specific scope and sequence, where each succeeding lesson is based on the preceding lessons. The investigations are written in such a way that your students will discover the true meaning of math and science integration—application of knowledge in the real world.

The Project AIMS K-1 series allows for flexibility for usage in your classroom. Use your own judgment to find the appropriate usage and development for each investigation.

To put a "spring into your step," each investigation has been provided with a student page to send home with your students.

This booklet is not intended to replace your science program, but is intended to be used as a supplement to the math-science curriculum. Remember that these experiments place prime emphasis on the science processes and skills. It is not necessary to have a laboratory and elaborate equipment to run a strong science program. All that is really needed is everyday materials and your willingness to try new ideas. GOOD LUCK!

—The K-1 Series Writing Team

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Sponge Garden

I. **Topic Area**
Plants

II. **Introductory Statement**
The students will watch seeds germinate and record the amount of time they take to sprout.

III. **Key Question**
Which day will one of your seeds sprout? Which kind of seed will sprout first?

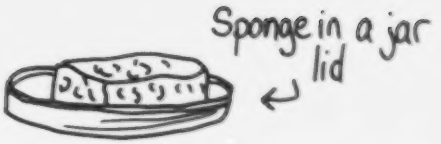
IV. **Math Skills**
a. Graphing
1. Counting
2. Recording data
3. Interpreting data
b. Predicting
c. Measuring
d. Patterning

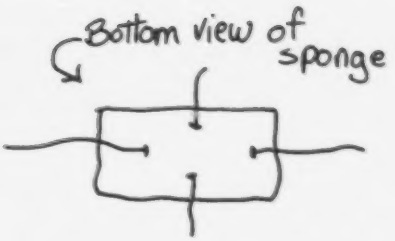
Science Processes
a. Observing
b. Predicting
c. Measuring
d. Gathering and recording data
e. Interpreting data

V. **Materials**
- Squares of natural or man-made sponges, one for each child. The fluffy carwash type are the best!
- Two or three types of seeds—mustard, alfalfa, watercress, or mung beans
- String or fishline and a needle, or jar lids for each sponge
- Two or three margarine tubs
- Graph and paper markers—one color for each type of seeds
- Cut 1" squares out of several colors of paper for the pattern strips
- Pattern strip out of butcher paper (3" × 24"), one for each child
- Two calendars

VI. **Background Information**
1. If kept moist, the seeds should start sprouting in a day or two.
2. You may want to soak the seeds in warm water for an hour before you start this activity to help speed up the germinating process.

VII. **Management**
1. Initially this activity will take 30-45 minutes and then a few minutes each day, for watering, until you want to send them home.
2. You can set the sponge in a jar lid and set them on desks or tables or hang the sponges with string in a window.





Sponges in window

3. Water the sponge daily by holding a margarine tub of water underneath, until the sponge is moist but not soggy and dripping.

VIII. **Advanced Preparation**
1. Have the sponges cut and threaded if you plan to hang them.

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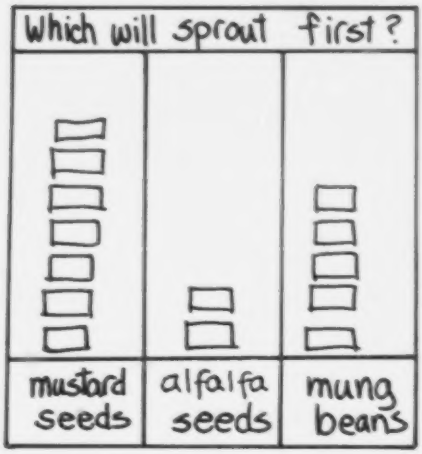
2. Prepare the graph and the paper markers for the children's prediction.



3. Prepare the two calendars. Calendar #1 is for the predictions. Calendar #2 is to record the actual date of the sprouts.

What day will your seeds sprout?						
Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.

What day did your seeds sprout?						
Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.

IX. **Procedures**

1. Allow each child to have the opportunity to hold and observe each of the types of seeds you will be using. Discuss and record their observations on the chalkboard or paper.
2. Discuss various places for gardens and then explain to them that a sponge is going to be their garden.
3. Ask the children to predict which type of seed will sprout or start to grow first.
4. Record their predictions on the graph and discuss.
5. Divide the class into two groups. One group will stay with you on the floor to plant the seeds, while the other group will return to their seats to make a paper seed pattern strip.
6. To plant the seeds hand out the following to each child:
   a. A sponge that has been threaded with two strands of string.
   b. Many seeds of the type the child has decided to plant.
   c. Soak the sponge in a dish of water and then squeeze out the excess.
   d. Sow the seeds in open pores of the sponge.
   e. After the seeds are in place, set the sponge in a shallow dish or margarine tub of water and let it drink its fill.
   f. Make a nametag.
7. Switch the groups. Repeat steps #6 a.-f.
8. Hang the sponges with the nametags or place them in the spot you want them to be in.
9. Gather the students together. Ask the students to predict which day they will see their first sprout. Record their prediction on the graph with one of the paper seed squares from their patterns. Discuss the calendar in a way similar to a graph. Display the graph in the room.
10. Display calendar #2 in the room to record, each day, whose seeds sprouted and what type it was.

X. **Discussion**

1. What would happen if we didn't water some of the sponges each day?
2. What would happen if we put some of the sponges in the closet or covered them so they couldn't receive any sunlight?
3. What else could we use to sow the seeds on?
4. What other types of seeds could we sprout? Would they sprout faster? Slower?

XI. **Extensions**

1. Try not watering some of the sponges. Try covering the sponges up.
2. How many unifix cubes will balance the dry sponge?
3. How many unifix cubes will balance a wet sponge?
4. How many mung beans are in a small baby food jar?
5. How many mung beans will cover a 2" square?

XII. **Curriculum Coordinates**

Language Arts

1. Record the plants progress in a journal, written or pictoral.
2. Put the planting procedure pictures or sentences in sequence.
3. Interview and/or visit a farm.

Art

1. Make a picture using different types of seeds.

Science

1. Taste, smell, touch, see, and hear the plants you have grown. All 4 types are edible.

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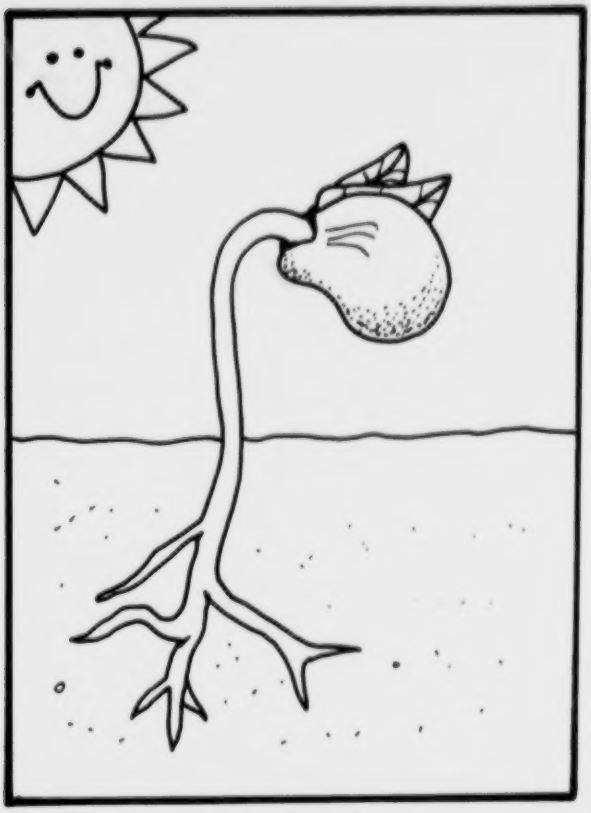
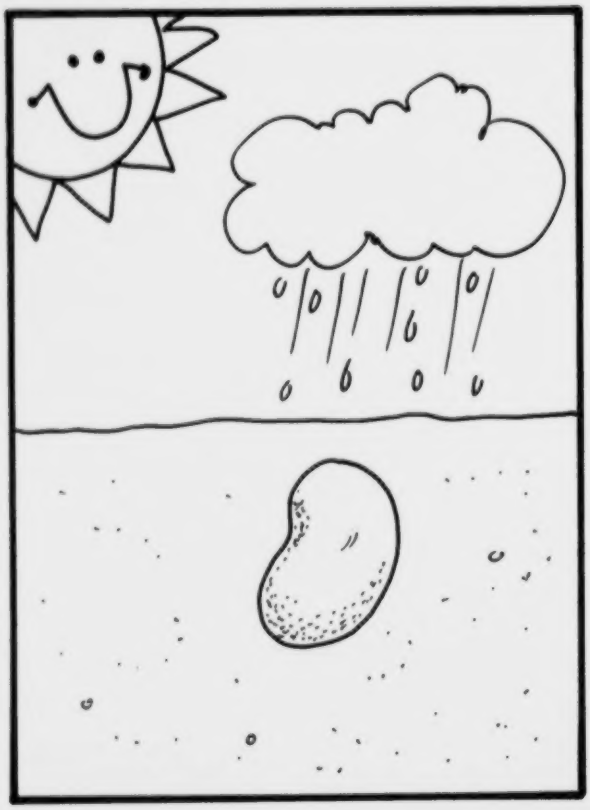
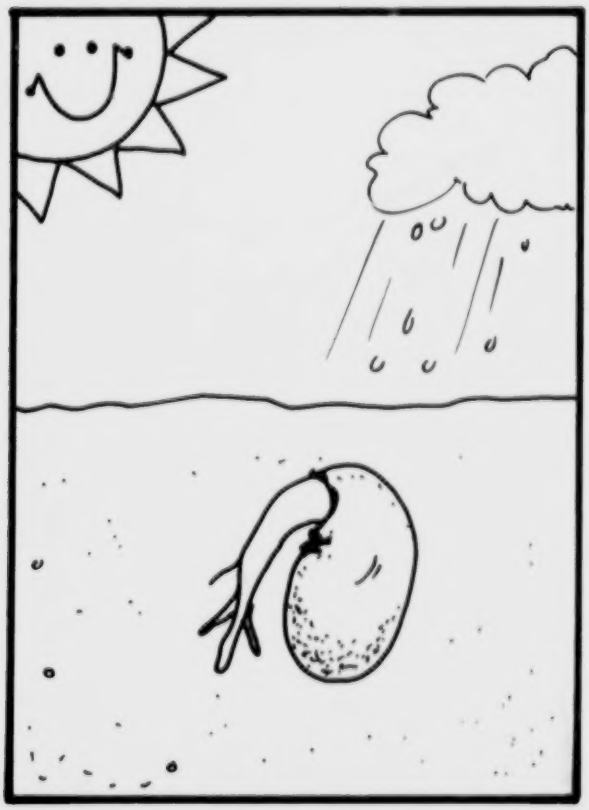
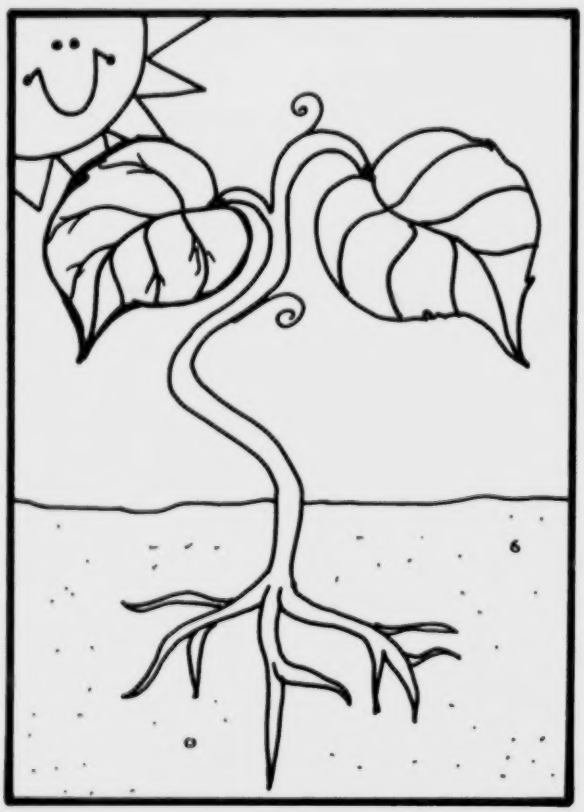
Seed Growth Sequence Cards

Color, Cut out, Glue down in order.









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The Sounds of Music

I. **Topic Area**
Sound/senses

II. **Introductory Statement**
Students will hear that the fuller the glass the lower the pitch and the lesser amount of liquid the higher the pitch.

III. **Key Question**
Which glass will make the higher sound or pitch?

IV. **Math Skills**
a. Graphing
1. Counting
2. Recording data
3. Interpreting data
b. Predicting
c. Pattern

Science Processes
a. Predicting
b. Gathering and recording data
c. Interpreting data

V. **Materials**
- 3 glasses of water filled to different heights
- food color
- rubberbands—one for each child
- pattern strips out of butcher paper
- copies of the worksheet of glasses
- graph and markers
- xylophone or piano

VI. **Background Information**
1. Vibrations cause sound.
2. The more water or liquid in a glass, the lower the pitch. The less liquid in a glass, the higher the pitch.

VII. **Management**
1. This activity will take about 45 minutes.
2. You can do this in small groups or as the whole class.

VIII. **Advanced Preparation**
1. Prepare the graph and markers for their predictions.
2. Prepare 3 glasses of water, each with a different level of water. Color each glass of water with a different color of food coloring.
3. Run copies of the glass pattern sheets for the children to color to correspond with the glasses of water.
4. Cut pattern strips out of butcher paper about 6" × 24".

IX. **Procedure**
1. Pass out the rubberbands to each child and ask them to use the rubberband to make some sound (noise). They will try it all kinds of ways.
2. Discuss how they made sound. Introduce the word vibration if they do not come up with it. Reinforce that objects need to be touched to vibrate.
3. Use the piano or xylophone to demonstrate and hear the differences in pitch. You may want them to stand or squat according to the pitch.
4. Bring out the 3 glasses of water and ask if the glasses will make a sound if they are hit with a pencil. They should say yes from the previous activities.
5. Show the graph and ask the students to predict which glass will make the higher sound or pitch. Children will record their predictions. Discuss.
6. Have several children come up to test it out using a pencil to cause the vibration. Discuss.
7. Pass out worksheets and have them color the water glasses to match the glasses. Tell the children that they will make a pattern strip which will be their own *song*.
8. The children will make their strips and then in their free time or during sharing, they can play their songs for the class or a friend.

X. **Discussion**
1. What would happen if we used something other than water in the glasses? What could we use?
2. Will different shaped glasses make a difference?

XI. **Extensions**
1. Estimate the number of spoonfuls of water in the fullest glass.
2. Put Jell-o in the glasses.
3. Put beans in the glasses.
4. Use ice in the glasses.
5. Draw pictures of things that make high or low pitches.

XII. **Curriculum Coordinates**
Language Arts
1. Watch the movie "Peter and the Wolf."
Music
1. Make your own instrument. Some examples are in *I Can Make A Rainbow* by Marge Frank.
2. Sing your favorite songs.
Art
1. Draw or paint pictures to music.

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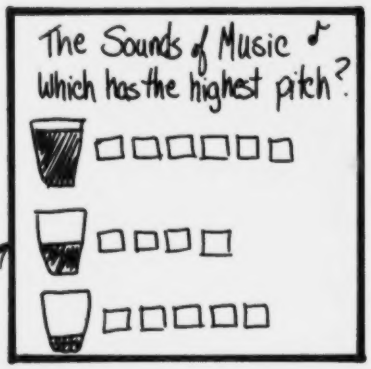
The Sounds of Music

1. Prepare the graph and markers for students predictions.
2. Bring out 3 glasses of water - each with a different level of water and each with a different color of food coloring.
3. Have children record predictions of which glass will make the highest pitch. Discuss Graph.
4. Have several children come up to test the sounds of the glasses with a pencil to cause vibrations. Discuss



5. Pass out worksheets and have them color the water glasses to match the colors of the real glasses.
6. Cut out pattern strips 6" X 24". (butcher paper)
7. Tell children to cut out the glasses and glue them to a pattern strip to make up their own song.

8. Children may play their songs for the class or a friend.

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CUT OUT.. GLUE DOWN..

PRINT ON WHITE - COLOR TO MATCH GLASSES. . . .

SOUNDS OF MUSIC GLASSES.. . . . . .

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Lucky Shamrocks

I. **Topic Area**
Cooking/Holidays

II. **Introductory Statement**
Students will follow a recipe to make shamrock cookies.

III. **Key Question**
What do you think the recipe left by the leprechauns will make?

IV. **Math Skills**
a. Counting
b. Measuring
c. Formula usage
d. Appyling formulas
e. Measuring volume
f. Fractions
g. Interpreting data
h. Logical thinking

Science Processes
a. Observing and classifying
b. Measuring
c. Applying and generaling
d. Interpreting data

V. **Materials**
- recipe for small group on shamrock-shaped paper
- margarine
- sugar
- eggs
- vanilla
- all-purpose flour
- salt
- green food coloring
- green sprinkles
- rolling pin
- cup and teaspoon measuring utensils
- cookie cutters
- cookie sheet

VI. **Background Information**
1. For 25 students, you will need:

2 c. margarine	2 t. vanilla
1⅓ c. sugar	5 c. all-purpose flour
4 eggs	1 t. salt
green food coloring	green sprinkles

2. The dough must be made ahead of time, and placed in a refrigerator for at least 3 to 4 hours.
3. The cookies must be baked at 350 degrees, Fahrenheit for 8 to 10 minutes.

VII. **Management**
1. This activity takes two periods of 20 to 30 minutes.
2. Students should work in groups of four to six, with an adult.

VIII. **Advanced Preparation**
1. Prepare shamrock with the recipe on it. (See example at end of investigation.)
2. Gather and place all cooking materials at appropriate station.
3. Arrange for cookies to be baked at appropriate time.

IX. **Procedure**
1. On first day of investigation, show recipe to students, explaining its mysterious appearance (presumably left by leprechauns). Lead students in discussion about the recipe. See *X. Discussion.*
2. Explain to students that in small groups they will follow the recipe to make something. Read ingredients of the recipe and continue discussion. See *X. Discussion.*
3. When students meet in small groups, make sure students understand the use of the measuring utensils. Ask students to wash their hands and allow each person to measure an ingredient or mix ingredients together.
4. When each group has met, show finished dough to class and lead discussion about what was made. Be sure the students come to the conclusion that it is cookie dough. See *X. Discussion.*
5. Place dough in refrigerator for at least 3 to 4 hours.
6. On second day of investigation, students meet again in small groups. Give each student a ball of dough and allow each one to roll out dough, cut out cookie(s) with cookie cutter and sprinkle with green sprinkles.
7. Place cookies on cookie sheet. Identify each student's cookie(s) by placing masking tape, with name on it, above cookie(s). (The masking tape will not burn in the oven.)
8. Place cookie sheet in oven at 350 degrees Fahrenheit for 8 to 10 minutes.
9. Let students eat cookie(s) for a snack or take home with a copy of the recipe (see example at end of investigation).

X. **Discussion**
1. Where do you think this recipe came from?
2. How did it get here?
3. What do you think this recipe will make?
4. What did the recipe make?
5. What were the ingredients we used to make the Lucky Shamrock recipe?
6. Could we have used other ingredients?
7. Could we have used more or less of a certain ingredient?
8. Why did we have to put the dough in the refrigerator?

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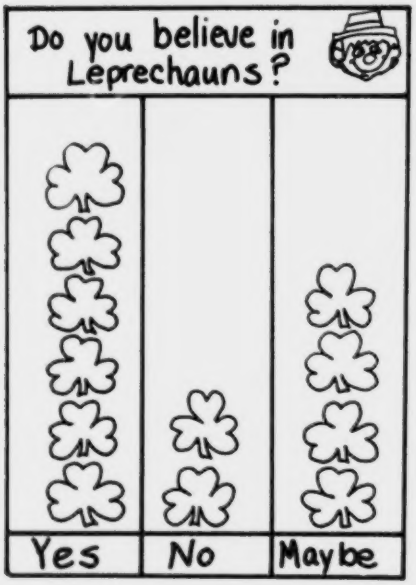
XII. **Curriculum Coordinates**

Language Arts

1. Students and teacher make a list of things that are green or a list of things that are lucky. Students write sentences using words from list(s).
2. Students write letters to leprechauns thanking them for leaving the recipe.

Art

1. Students make the clover leprechaun. (See pattern at end of investigation.)



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Surprise! The leprechauns came to our room at night and left us a recipe for special cookies. We made them at school and the leprechauns want us to share the recipe with you too!

Lucky Shamrock Recipe

Mix: $\frac{1}{2}$ cup margarine
$\frac{1}{3}$ cup sugar
1 egg
$\frac{1}{2}$ tsp. vanilla
$1\frac{1}{4}$ cup all purpose flour
$\frac{1}{4}$ tsp. salt
green food coloring
green sprinkles

Shape and Bake at 350° F for 8 to 10 minutes

For extra flavor, add a bit of peppermint extract.

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Reach for A Rainbow

I. **Topic Area**
Rainbows

II. **Introductory Statement**
Students will discover properties of a rainbow.

III. **Key Question**
1. What is your favorite color?
2. What do you think we will see in the prisms?

IV. **Math Skills**
a. Graphing
1. Counting
2. Generalizing
3. Interpreting data
4. Observing
5. Whole number computation

Science Processes
a. Observing and classifying
b. Gathering and recording data
c. Interpreting data
d. Applying and generalizing

V. **Materials**
- Rainbow shaped graph
- White butcher paper
- Multi-colored crepe paper
- Yarn
- Glue
- Multi-colored construction paper
- Cloud patterns
- Newspaper
- Hole punch
- Prisms

VI. **Background Information**
There are two types of rainbows, primary and secondary. The primary rainbow begins with red at the top, followed by orange, yellow, green, blue, and ending with purple on the inside. The secondary rainbow is just the opposite, beginning with purple and ending with red. Whatever type is chosen, be sure to assemble the colors in the correct order.

VII. **Management**
1. This investigation takes three time periods—one of about 20 minutes to introduce investigation and look through prisms. The second period should take 20-30 minutes to assemble the rainbow clouds. The third time period requires approximately 20 minutes for the graph. The last two periods may be incorporated into seatwork and/or center periods and run simultaneously.

VIII. **Advance Preparation**
1. Prepare rainbow shaped graph. (See end of investigation for example.) Cut multi-colored construction paper for students to place on graph.
2. Prepare materials for rainbow clouds. Be sure to have enough cloud patterns for children to trace around. Prepare one folded piece of white butcher paper and one set of cut crepe paper strips for each child (red, orange, yellow, green, blue, purple). Cut strips 2" wide and 18" long.
3. Be sure to have prisms ready for use.

IX. **Procedure**
1. Present graph to students, asking "What is your favorite color?" Instruct students to choose one piece of paper to represent their favorite and to write their name on it. Allow students to place paper in appropriate space on graph.
2. After completion of graph, lead students in discussion on graph (See *X. Discussion.*)
3. Introduce students to prisms. Instruct students on proper handling of prisms for best results. (See *X. Discussion.*)
4. Allow students to discover rainbow in prisms. Allow students to discuss their experience. (See *X. Discussion.*)
5. Present example of the rainbow cloud. Give the following instructions to students.
   a. Place the cloud pattern on the folded butcher paper, trace and cut out.
   b. Glue the two pieces together, leaving the bottom open.
   c. Stuff the cloud with wadded newspaper.
   d. Place line of glue on bottom sheet.
   e. Place crepe paper strips, in order, on top of glue.
   f. Place another line of glue across crepe paper strips and press top of cloud together with bottom cloud.
   g. When glue is set, punch hole at top of cloud and string yarn through hole. Tie knot with yarn.
6. Assist students in making the rainbow clouds. Students' names may be placed on cloud before stuffing.

X. **Discussion**
1. What is your favorite color?
2. How many people chose red...yellow...etc. as their favorite color?
3. Which color was chosen most/least often?
4. How many people all together chose red or blue... green or blue...etc.?
5. How many more people chose red than blue... green than red...etc.?
6. What do you think we will see in the prisms?
7. What did you see in the prisms?
8. How do you think the prisms are able to show a rainbow?

XI. **Extensions**
1. Teacher reads *A Rainbow of My Own* by Don Freeman.
2. Students finish sentence "If I were a rainbow, I would want to..."
3. Students collect items with rainbows on them for class collection.

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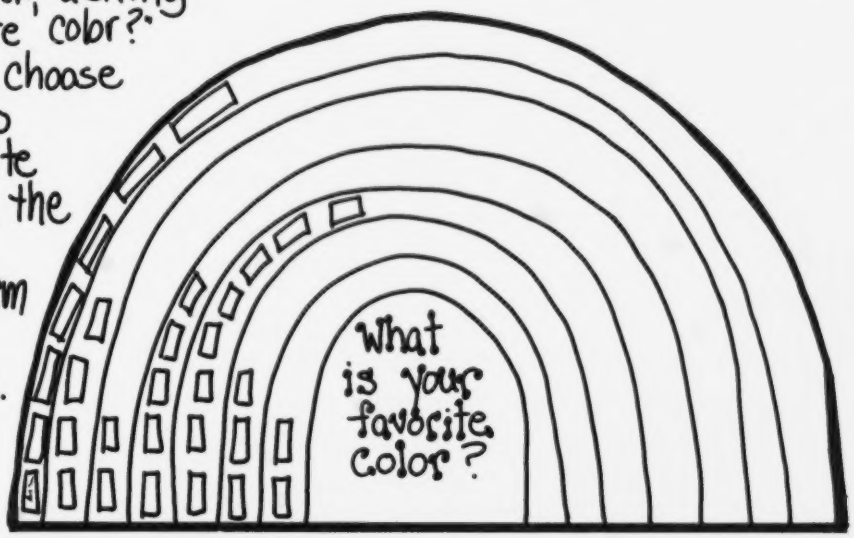
Reach for A Rainbow

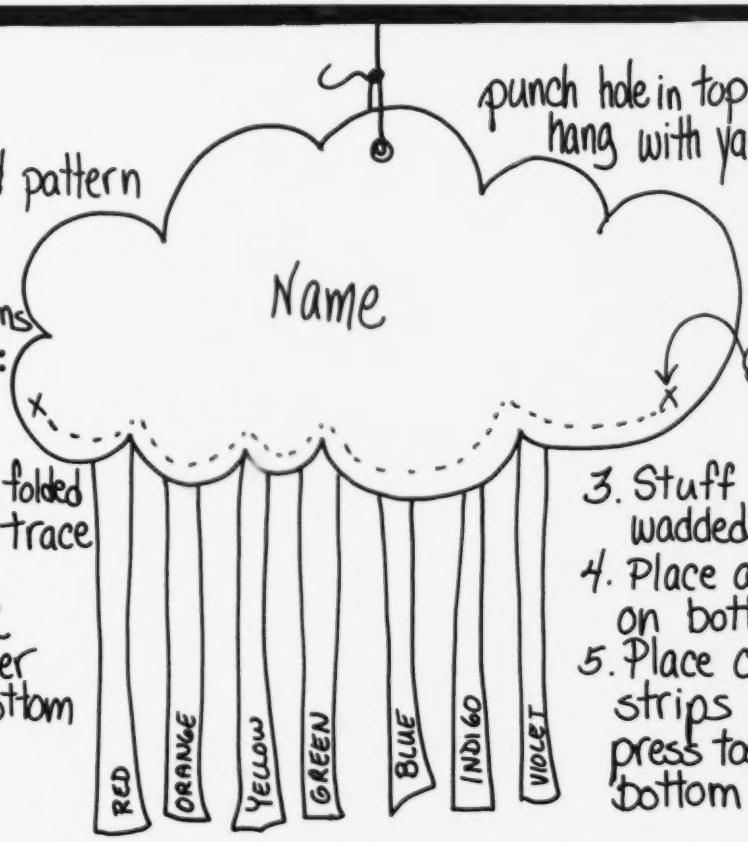
1. Prepare a rainbow shaped graph
2. Present graph to children, asking "what is your favorite color?"
3. Instruct students to choose one piece of paper to represent their favorite color. Write names on the pieces and have students place them in appropriate places on the graph.



A. Make a cloud pattern 12"x 18"

B. Give instructions to students:

1. Place the cloud pattern on folded butcher paper, trace and cut out.
2. Glue the 2 pieces together leaving the bottom open.



3. Stuff the cloud with wadded newspaper.
4. Place a line of glue on bottom sheet.
5. Place crepe paper strips in order and press top of cloud with bottom of cloud.

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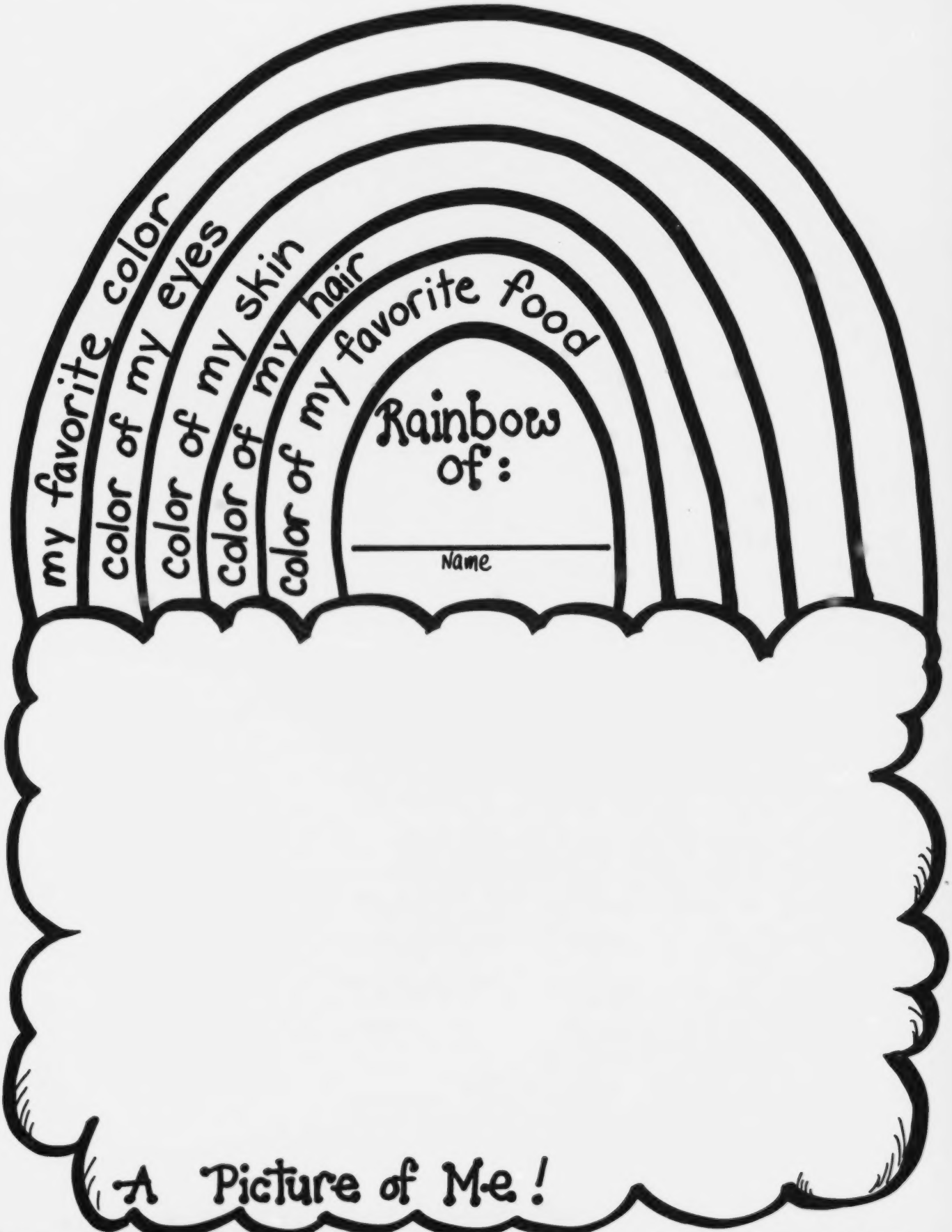

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Huff and Puff

I. **Topic Area**
Energy of Moving Air

II. **Introductory Statement**
Students will move objects by blowing at them.

III. **Key Question**
How many times do you have to blow an object to make it travel three feet?

IV. **Math Skills**
a. Recording data
b. Graphing
1. Counting
2. Comparing
3. Set theory
4. Whole number computation

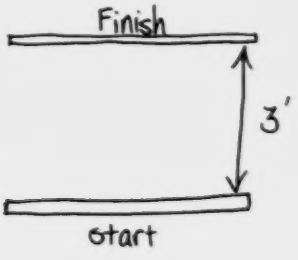
Science Processes
a. Observing
b. Controlling variables
c. Gathering and recording data
d. Interpreting data
e. Applying and generalizing

V. **Materials**
- marble
- leaf
- yarn ball
- small pebble
- clothespin
- pencil
- rubber ball
- kleenex
- crayon
- balloon (blown up)
- masking tape
- yardstick
- student pages

VI. **Background Information**
1. Use a clean, dry surface to test objects on.

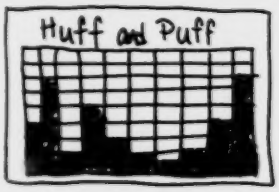
VII. **Management**
1. This activity may take thirty minutes.
2. This activity works best when done in small groups.

VIII. **Advanced Preparation**
1. Place a piece of masking tape about two feet long on the floor for the "starting line."
2. Three feet away, place another piece of masking tape about two feet long for the "finish line."
Example:



3. Get out all the materials mentioned in the "Materials" list.

IX. **Procedure**
1. Show the children the objects and have them name each one.
2. Introduce their student page graph and have the children find pictures of these same objects on their graph. (See "Huff and Puff" graph page.)
3. Ask: "How can we move these objects from the starting line to the finish line *without* touching them?"
4. Tell a child to place the first object at the starting line and blow at it until the object crosses the finish line, counting the number of blows it takes the object to move the distance.
5. Have the child record the number of blows on his/her graph by coloring in the corresponding number of blocks.
Example:



6. Continue this procedure with the remaining objects.

X. **Discussion**
1. What made the objects move?
2. Which object took the *most* blows to move? Why?
3. Which object took the least amount of blows to move? Why?
4. Name some objects you've seen the wind blow. (Examples: dust, clouds, smoke, clothes, flags, pieces of paper, leaves, etc.)

XI. **Extensions**
1. Let the children select other objects and blow at them. Record the results on a graph (See blank "Huff and Puff" graph page.)
2. Have a race: each child selects an object and has a "blowing" race with another child.

XII. **Curriculum Coordinates**

Language Arts

1. Read: "It Looked Like Spilt Milk"
2. Recite poems about the wind.

Music

1. Sing: "Wind"

Physical Education

1. Move as if the *wind* were blowing you, and you are a...
   - rubber ball
   - leaf
   - piece of paper
   - pencil
   - crayon
   - balloon
   - marble, etc.

Art

1. Make a kite and fly it.
2. Make a pinwheel.

Huff and Puff

Name: _____

10										
9										
8										
7										
6										
5										
4										
3										
2										
1										

SPRING INTO MATH AND SCIENCE 18 ©1987 AIMS Education Foundation

Huff and Puff

Name: _____

10										
9										
8										
7										
6										
5										
4										
3										
2										
1										
	marble	leaf	yarn ball	pebble	clothes pin	pencil	rubber ball	Kleenex	crayon	balloon

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Eggstra Exploration

I. **Topic Area**
Food/Easter

II. **Introductory Statement**
Students will explore various characteristics of an egg.

III. **Key Question**
What can we find out about an egg?

IV. **Math Skills**
a. Counting
b. Estimating
c. Predicting
d. Observing
e. Measuring
f. Graphing
1. Recording data
2. Interpreting data

Science Processes
a. Observing
b. Measuring
c. Gathering, recording, and interpreting data

V. **Materials**
- one dozen eggs (six raw and six hard boiled)
- chart paper for children's observations
- magnifying glasses (optional)
- four color race track
- Venn Diagram
- hot plate
- fry pan and 1 qt. saucepan
- markers for graphs
- grid paper for measuring area
- graph worksheets
- balance or scale
- unifix cubes, crayons, scissors and bottlecaps

VI. **Background Information**
1. This lesson consists of several short activities in which all or some may be used as an Easter week experience.
2. The parts of a food egg are: the shell, the membrane, the albumen (egg white), and the yolk.

VII. **Management**
1. These activities can be done in small groups or as a whole class divided into groups.
2. For many of these activities you will want the work space covered with paper and some water handy in case of accidents.
3. Each activity listed has the materials needed for that activity listed under the *Advanced Preparation* section.

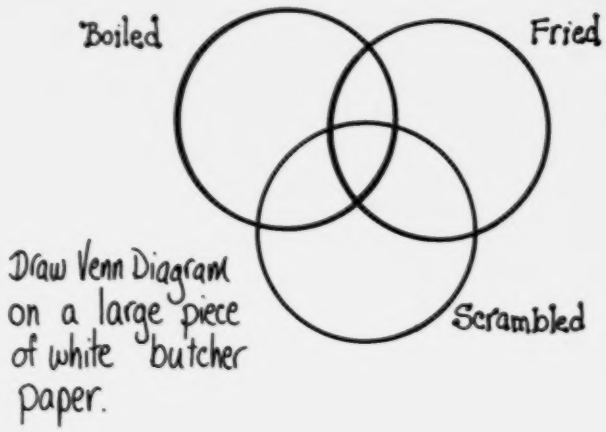
Observation Activity

VIII. **Advanced Preparation**
1. Chart paper to write the childrens' observations
2. Six hard boiled eggs
3. Six magnifying glasses (optional)

IX. **Procedure**
1. Pass out the eggs, one to each of the six groups.
2. Let the students hold, feel, listen, and look at the eggs.
3. Write down the observations and let the chart hang during the week so that new things that they learn may be added. Be sure to bring out weight, size and shape words.

Liquid to Solid Activity

VIII. **Advanced Preparation**
1. Venn Diagram with 1 marker for each child
2. 3 raw eggs and 1 hard boiled
3. Hot plate with 1 frypan and 1 saucespan.



IX. **Procedure**
1. Bring out two eggs, 1 raw and 1 hard boiled.
2. Ask who'd like to play catch and toss the hard boiled egg around until someone drops it. "Why didn't it spill all over?"
3. To show that it's the heat that makes it solid, break open a raw egg and fry it or scramble it. Then take another raw and egg and boil it to show that it can solidify in the shell.
4. Bring out the Venn Diagram and ask "Which way do you like your eggs?" Have them place their markers on the diagram. Discuss it.

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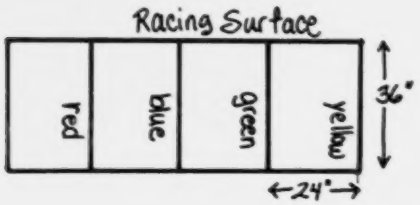
Shape Activity

VIII. **Advanced Preparation**

1. 3 balls and 3 hard boiled eggs
2. Two markers for each child, two different colors
3. Racing surface marked off into four color sections. Prepare it for inside or outside the classroom



IX. **Procedure**

1. Divide the class into 3 groups.
2. Make three lines at the end of the racing surface.
3. Decide if you want the contest to consist of rolling the ball, tapping it so many times and seeing where it lands or rolling it with their nose for so many seconds or so many pushes.
4. Have the first person in each group begin with the method you decided upon.
5. After each person has used the ball ask the children to predict where an egg would land using the same method they used with the ball. Have them place their guess on the color they think they will land in. Discuss.
6. Give each child the chance to roll the egg and place the other marker where it landed. Make a people graph. Use three categories: the same color section as their guess, a shorter roll than guess, or a longer roll than guessed. Discuss.

Egg Size Activity

VIII. **Advanced Preparation**

1. One sheet of grid paper for each child
2. 6 real-sized construction paper eggs

IX. **Procedure**

1. Have each child look at the paper egg and estimate how many squares will be covered by the egg when it's laid on top of the paper. Put their guess on the back of the sheet.
2. Trace the paper egg onto the grid paper. Color it in lightly. Count the number of squares covered. You can decide if you want to count just the whole squares that are covered or any square that is partially covered as well. Check the estimates.

Weight Activity

VIII. **Advanced Preparation**

1. Have the balance or scale available along with unifix cubes, crayons, scissors and bottlecaps.
2. Copy the graph worksheets. Two for each student (one for the estimate and one for the actual number). See attached pages.
3. 1 hard boiled egg for each group.

IX. **Procedure**

1. Put the children into groups of four.
2. Pass out the estimation sheet to each child. Have them estimate how many of each of the four objects will balance the egg. Color the number of squares in each column.
3. Pass out another sheet for their actual count. Color the number of squares it took to balance.
4. If you want you can cut the strips apart and glue the guesses and actual strips next to each other on a large piece of construction paper. The children can ask each other questions about the graphs.

X. **Discussions**

1. Can you think of any other experiments to try with an egg?
2. Could we do some of the same activities with another food? What happens?

XI. **Extensions**

1. Pattern strips. Prepare a strip of butcher paper about 4" × 24". Make copies of attached egg sheet on either tan and white paper for the real colors of eggs, or you can run it on all different colors of paper like an Easter egg. Cut the eggs out and glue them on the strip in a pattern.
2. The Spin Test. A hard boiled egg will spin longer and faster than a raw egg because the loose liquid in the raw egg acts as a brake. You may want to make predictions or timings.
3. The Floating Egg. A fresh raw egg will sink to the bottom of a cup. A very rotten egg will float. But a fresh egg will float when about ten teaspoons of salt are dissolved in 1½-2 cups of water.
4. Egg Symmetry. Make a copy of the large egg pattern for each child. Have the student fold it in half. The child will make a design on the one half and then give it to a neighbor to unfold and try to copy it on that half.

XII. **Curriculum Coordinates**

Language Arts

1. Read *The Enormous Egg*.
2. Place L'eggs containers around the room. Have the children write and draw what's inside, when will it hatch, how do you care for it, etc.
3. Put sentences or pictures into sequence for coloring eggs, making scrambled eggs, etc.

Physical Education

1. Run relay races with hard boiled eggs.
2. Play egg toss with partners.
3. Hide colored eggs for another class to find.

Art

1. Decorate paper eggs.
2. Decorate real eggs.
3. Make pictures out of colored egg shells.

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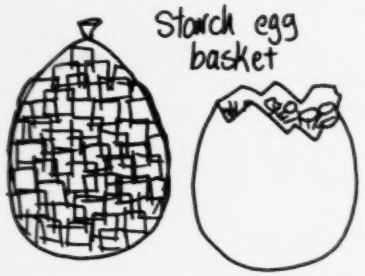
4. Starch Egg Baskets.
   a. Blow up one small balloon for each child.
   b. Cut squares of light colored tissue paper.
   c. Coat sections of the balloon with starch. Lay tissue over the balloon and coat with starch again. Be sure that the balloon is totally covered. Let dry over night and repeat the process for two more days. Pop the balloon at the knot end. Cut a jagged opening. Fill with plastic grass and jellybeans. You may want to make a baby chick using 2 yellow pom poms glued together. Cut a beak and feet out of construction paper and glue onto the pom poms.



Cooking

1. Make eggsalad. Four or five eggs should be enough for a class to have a taste on a cracker. Per 1 hard boiled egg add 1 tablespoon of Miracle Whip or mayonnaise. Add 1 shake of salt and 1 shake of pepper. Celery may be an optional addition.

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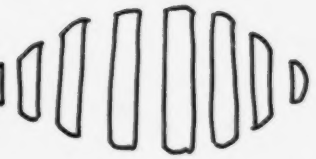
Eggstra Exploration

Eggstra Ideas:

1. Cut a large egg shape from wallpaper or printed paper. Spread apart and glue down. 

2. Soak a raw egg in vinegar to take the calcium out of the eggshell. It will feel like rubber and you can see through to the inside.

3. A hard boiled egg will spin, a fresh one will not.

4. How strong is an eggshell? Squeeze an egg on either end... It will not break.

5. Get the egg inside the bottle! The egg must be hard boiled and peeled. Place the egg in the opening. Burn paper in the bottom; the egg will slip in! Blow into the bottle to pop the egg out!

6. Fresh eggs sink in water. Rotten ones float. Add teaspoons of salt to the water to make the fresh egg float. How many teaspoons did you need to add?

7. Dye eggs. Crush the eggshells, make a mosaic design using white glue.

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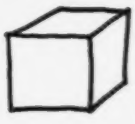
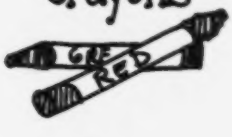
How many will balance an egg?

Name: _____

predict

I think:	I think:	I think:	I think:
30	30	30	30
29	29	29	29
28	28	28	28
27	27	27	27
26	26	26	26
25	25	25	25
24	24	24	24
23	23	23	23
22	22	22	22
21	21	21	21
20	20	20	20
19	19	19	19
18	18	18	18
17	17	17	17
16	16	16	16
15	15	15	15
14	14	14	14
13	13	13	13
12	12	12	12
11	11	11	11
10	10	10	10
9	9	9	9
8	8	8	8
7	7	7	7
6	6	6	6
5	5	5	5
4	4	4	4
3	3	3	3
2	2	2	2
1	1	1	1
Cubes	Crayons	Scissors	Bottle caps





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Name: _____

How many will balance an egg?

count

I count: Cubes	I count: Crayons	I count: Scissors	I count: Bottle caps
30	30	30	30
29	29	29	29
28	28	28	28
27	27	27	27
26	26	26	26
25	25	25	25
24	24	24	24
23	23	23	23
22	22	22	22
21	21	21	21
20	20	20	20
19	19	19	19
18	18	18	18
17	17	17	17
16	16	16	16
15	15	15	15
14	14	14	14
13	13	13	13
12	12	12	12
11	11	11	11
10	10	10	10
9	9	9	9
8	8	8	8
7	7	7	7
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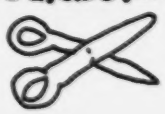
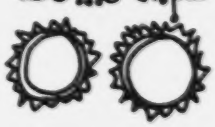
5	5	5	5
4	4	4	4
3	3	3	3
2	2	2	2
1	1	1	1





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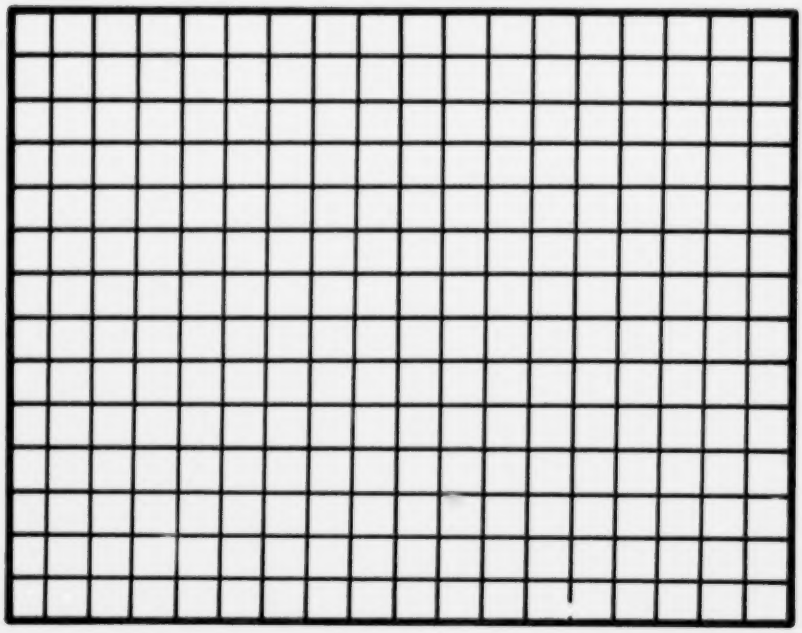
How many squares will an egg cover?

My guess

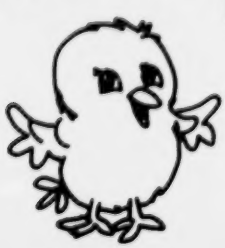
My count

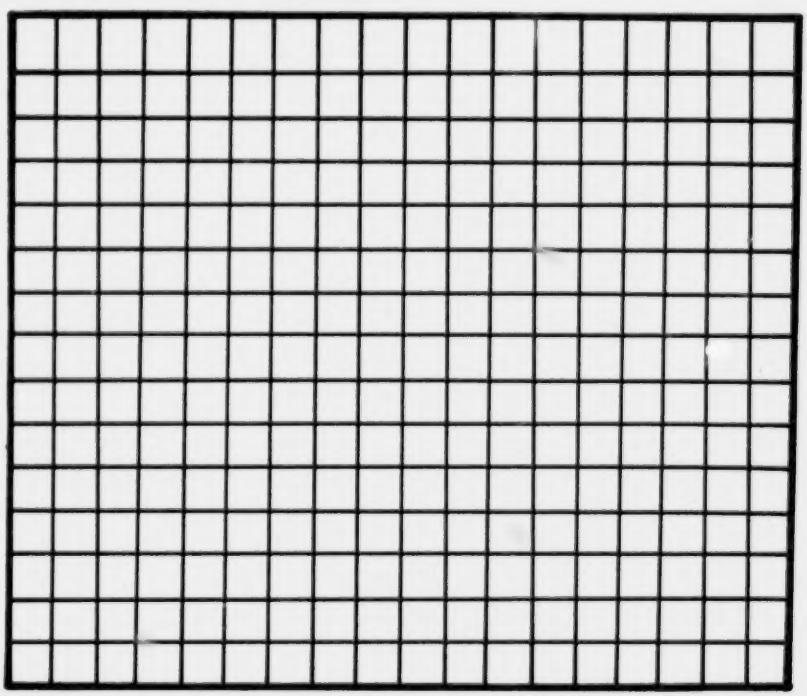


How many squares will an egg cover?

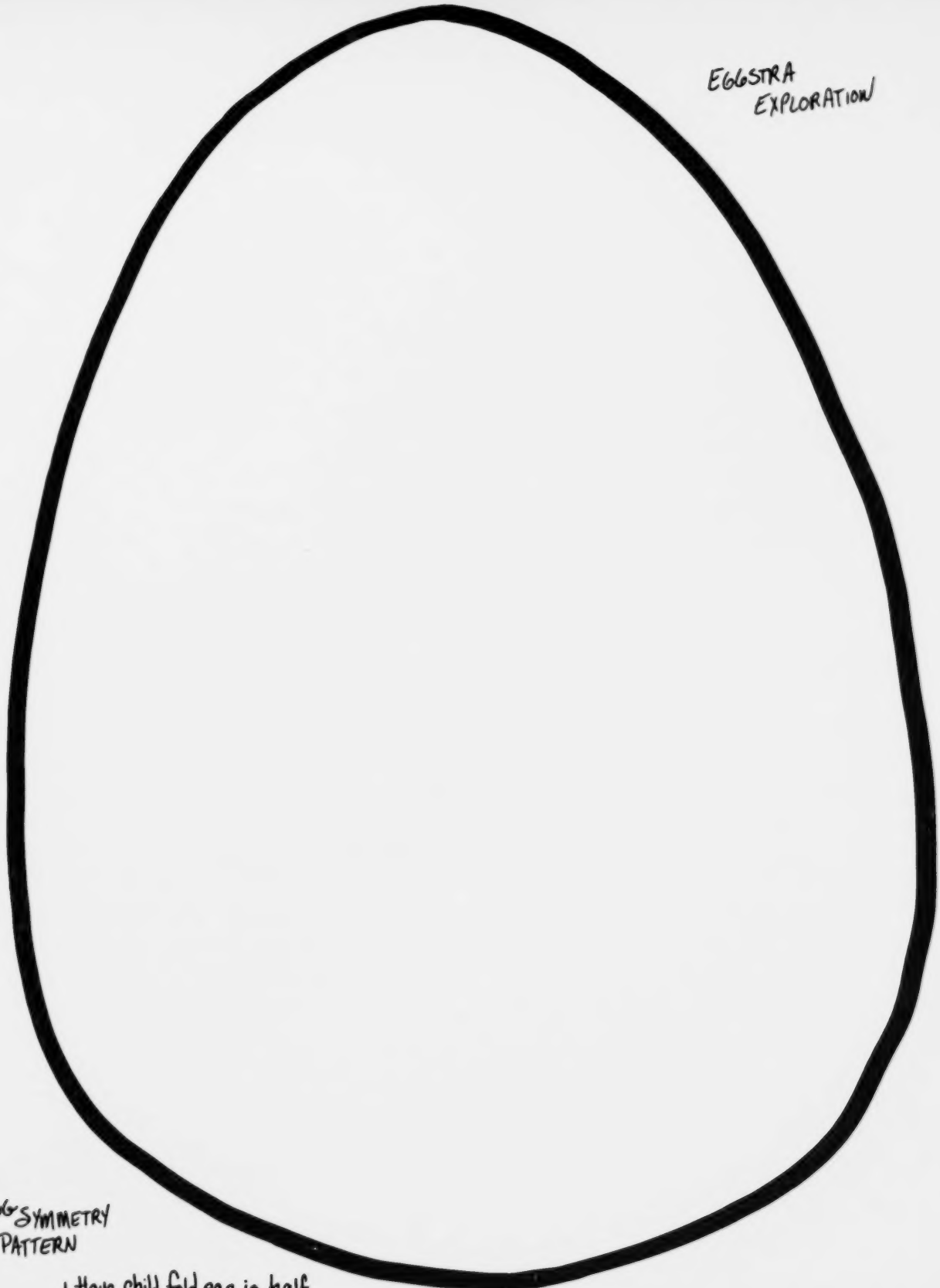
My guess

My count





EGGSTRA EXPLORATION



EGG SYMMETRY PATTERN

1. Have child fold egg in half.
2. Child will make a design on one half.
3. Then, give the egg to a neighbor who unfolds the egg and tries to copy the pattern on the other half.

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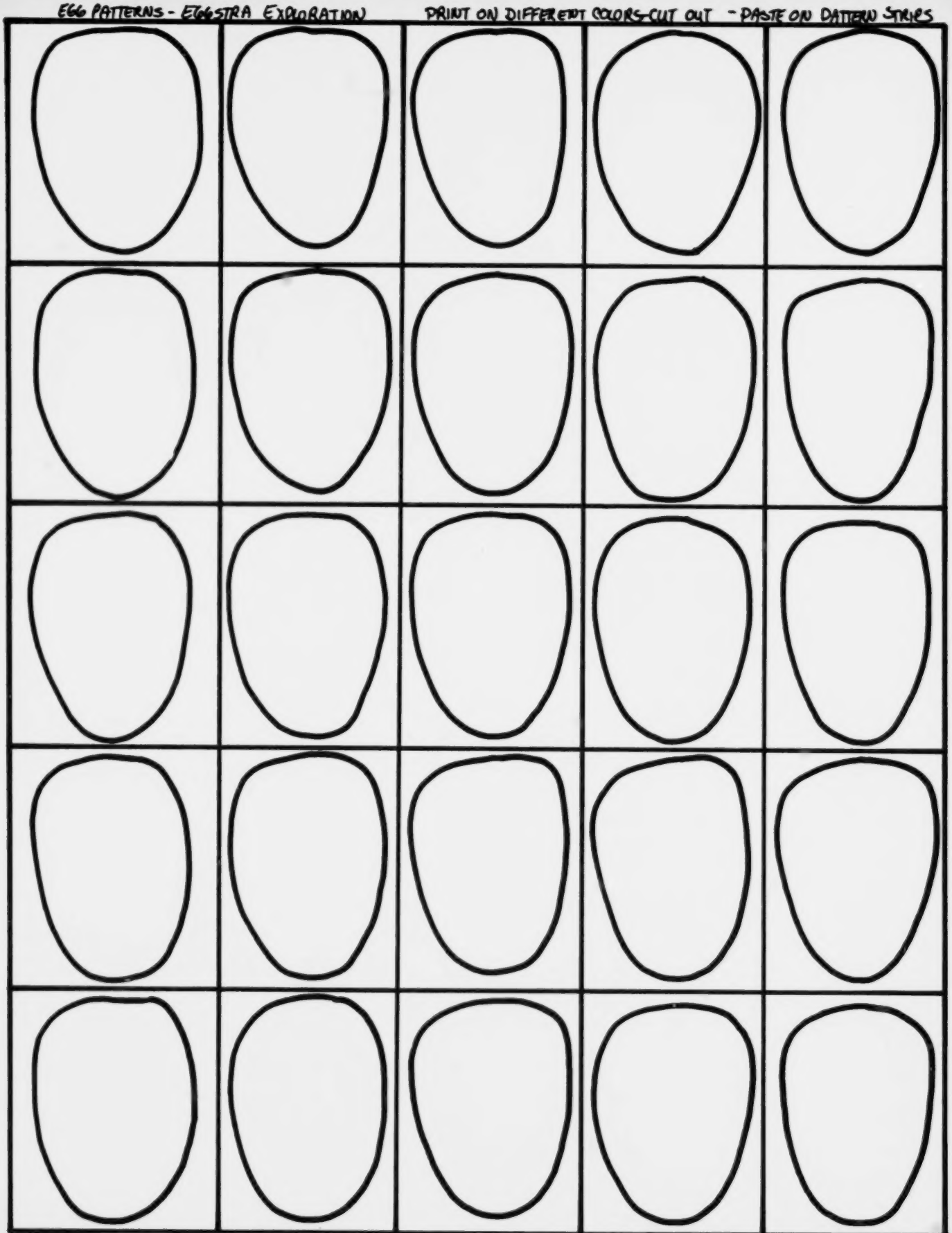
EGG PATTERNS - EGGSTRA EXPLORATION PRINT ON DIFFERENT COLORS-CUT OUT - PASTE ON PATTERN STRIPS



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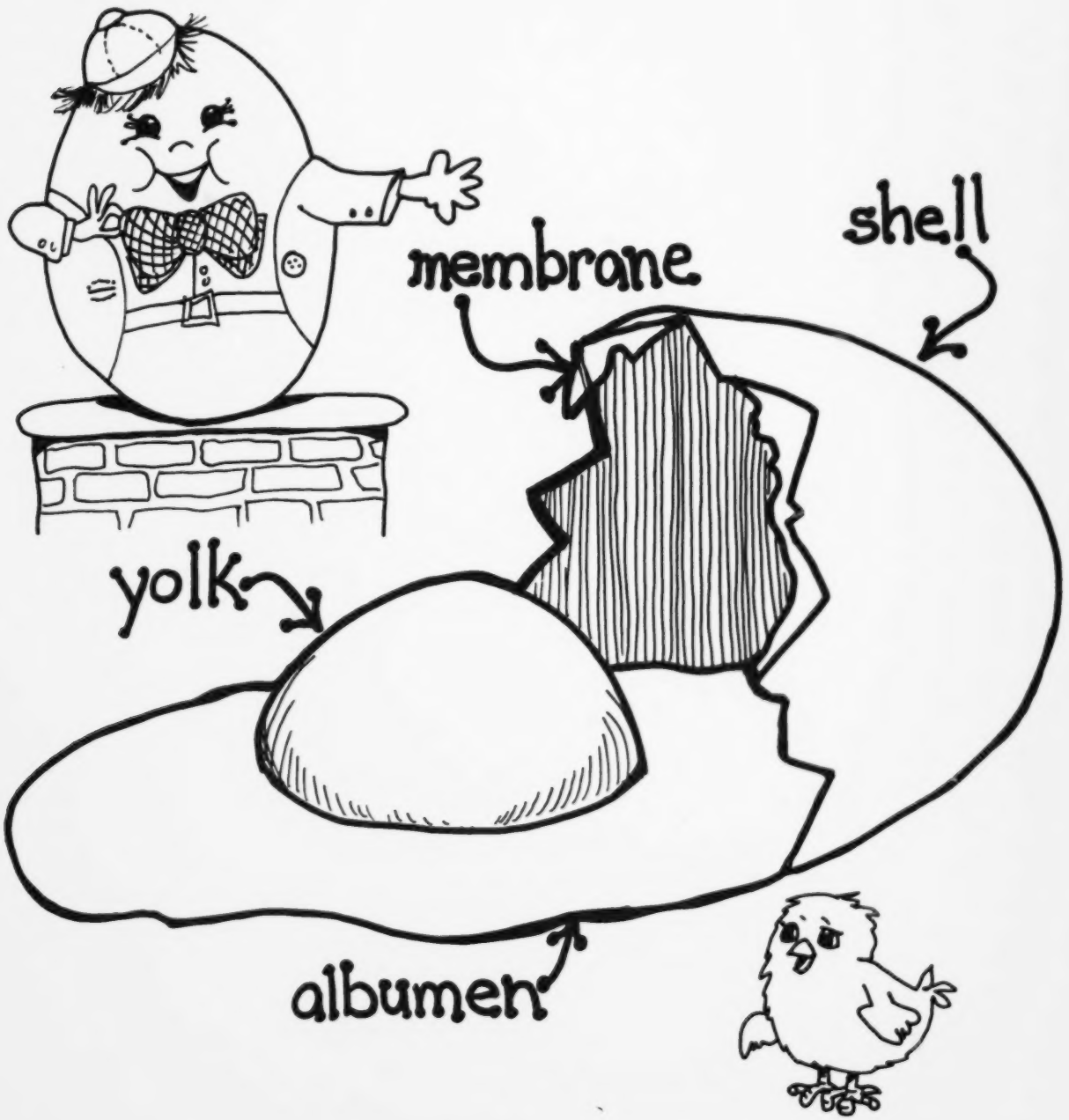
What's Inside an Egg?

Humpty Dumpty sat on a wall,
Humpty Dumpty had a great fall.
All the school children could not begin
To put poor Humpty together again!



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Good Egg Award

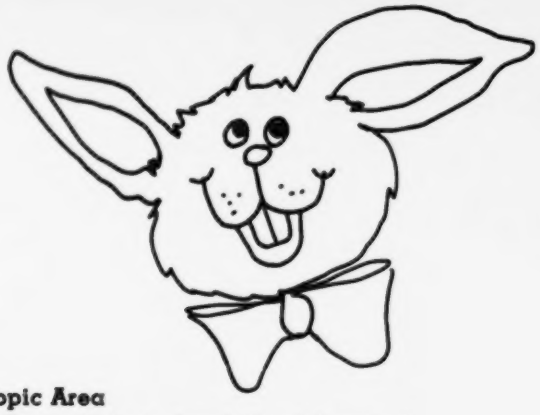
This certifies _____ has been a good egg this week.

_____
Teacher

Good Egg Award

This certifies _____ has been a good egg this week.

_____
Teacher



Bunny Dough

I. **Topic Area**

Bunny baker's dough (foods/seasons)

II. **Introductory Statement**

Students will learn how to make baker's dough bunnies.

III. **Key Question**

What do you think would happen if we did what Bobby's mother asked him to do?

IV. **Math Skills**

a. Counting
b. Measuring
c. Equations

Science Processes

a. Observing and classifying
b. Measuring
c. Interpreting data
d. Applying and generalizing

V. **Materials**

- flour
- salt
- water
- foil
- seven small mixing bowls
- cookie sheet
- containers for the flour, salt and water
- 1 one-cup measuring cup
- 2 ½-cup measuring cups
- Bobby Bunny story/letter

VI. **Background Information**

1. The completed bunnies are to be baked at 300° for about 1 hour, or until lightly browned. (check the bunnies periodically while they are baking)
2. For a class of 28 students, you will need:

7 c. flour	Place the ingredients into
3½ c. salt	containers—one
3½ c. water	ingredient/container

VII. **Management**

1. This activity takes 60-90 minutes.
2. Students work in groups of four.
3. Set-up three "measuring stations"—one for flour, one for salt, and one for water.

VIII. **Advanced Preparation**

1. Place the salt, flour, and water at their appropriate measuring stations.
2. Place the recipe so that it can be easily seen at all measuring stations.
3. Make a Bobby Bunny to be used while reading the bunny story/letter.
4. Make the letter that Bobby's mother left him.
5. Cut the foil into 6" × 6" pieces.

IX. **Procedure**

1. Students listen while the teacher reads the Bobby Bunny story/letter.
2. Each group of students begins at one of the measuring sections—then they proceed as a group to the two remaining stations.
3. When all of the ingredients are in the bowl, the students take turns forming the ingredients into a dough ball with their hands.
4. Students divide the dough ball into four equal pieces.
5. Each student then proceeds to make a bunny out of his/her dough.
6. Students place their completed bunnies on their own piece of foil.
7. The students may wish to paint the bunnies after they have baked. Watercolors work well.

X. **Discussion**

1. What did we need to make our dough bunnies?
2. What would have happened if we had left out one of the main ingredients?
3. What do you think would happen if we didn't read the recipe and used whatever amount we wanted of each of the ingredients?
4. What if we didn't bake our bunnies—could they dry-out any other way? How?

XII. **Curriculum Coordinates**

Language Arts

1. Students can write letters to Bobby Bunny telling him about what they have done.

   Ex.: Dear Bobby Bunny,
   My name is _____. Our class made dough bunnies just like you did. We had lots of fun!
   Love,
   _____

Art

1. Students can make Bobby Bunnies.
2. The dough bunnies can be decorated. Watercolors can be used to paint the face and ears. A cotton ball can be glued on for a tail. A yarn tie can be tied around the neck.

Physical Education

1. Students can play "Bobby Says." (Simon Says)

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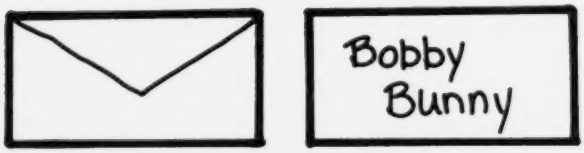
Bobby Bunny Story-Letter

Read aloud to the children while holding a completed Bobby Bunny:

Oh no, it is a rainy day.
I can not go outside to play.
I see that my mother has left me a note.
Lets open it up to see what she wrote.

large envelope



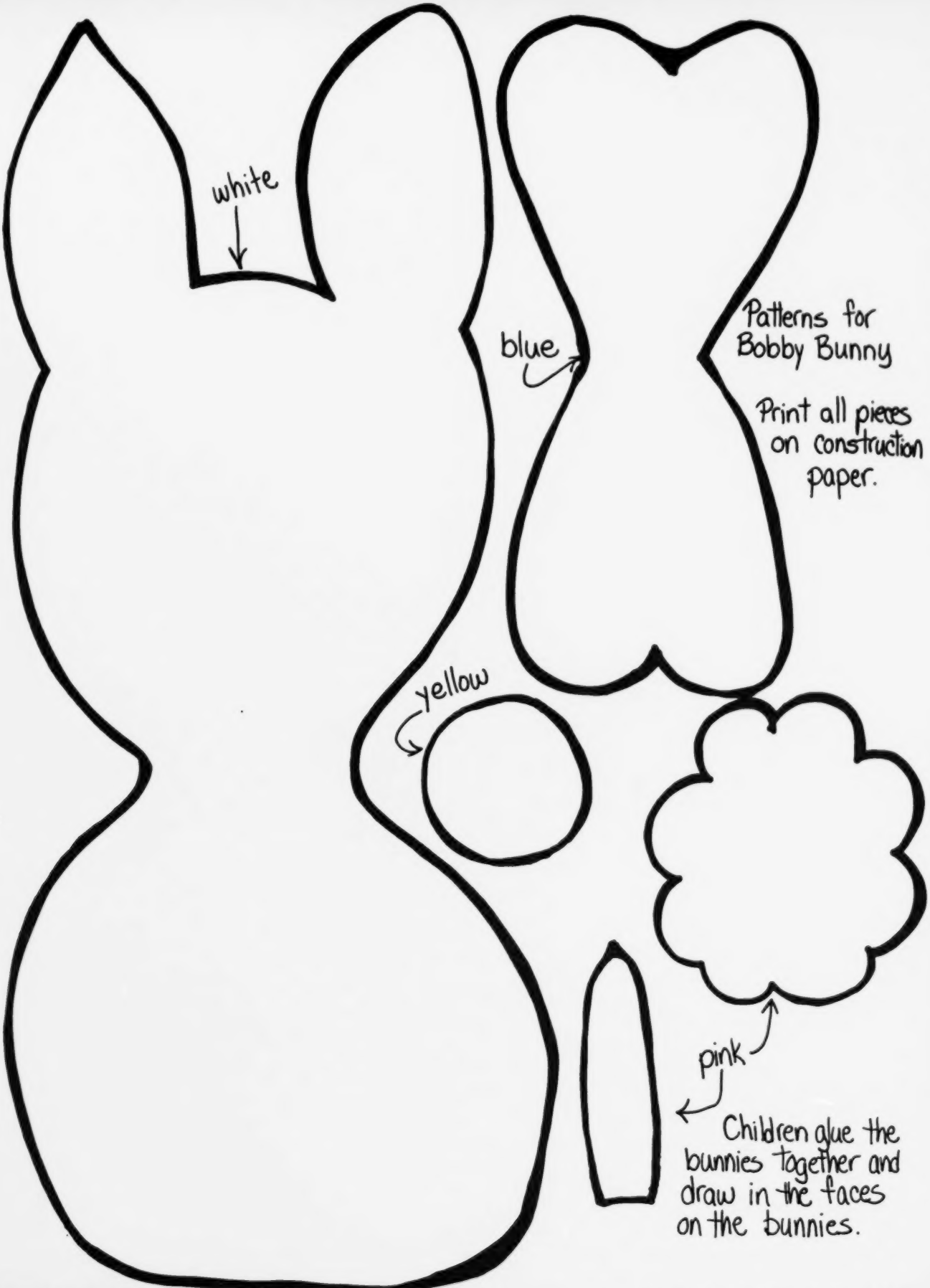
1. Cut out bunny shape from 24" x 36" white butcher paper.
2. Write this letter on bunny shape →
3. Fold to look like a letter and place in an oversized envelope.
4. Open the letter as Bobby "reads it."
5. Make bunny shapes or any Easter animal.

24" x 36" white butcher paper

Dear Bobby,
Since it is a rainy day, you must stay inside and play. There is something you can do. I am leaving the directions for you.

Put into a bowl and mix:
½ cup salt
½ cup flour
½ cup water
Roll into a ball. Make into any shape and bake!

350° for 1 hour



Patterns for Bobby Bunny

Print all pieces on construction paper.

Children glue the bunnies together and draw in the faces on the bunnies.

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Bobby Bunny

Color.
Mount on Tagboard
Cut out
Glue to a popsicle stick.

Stick Puppet

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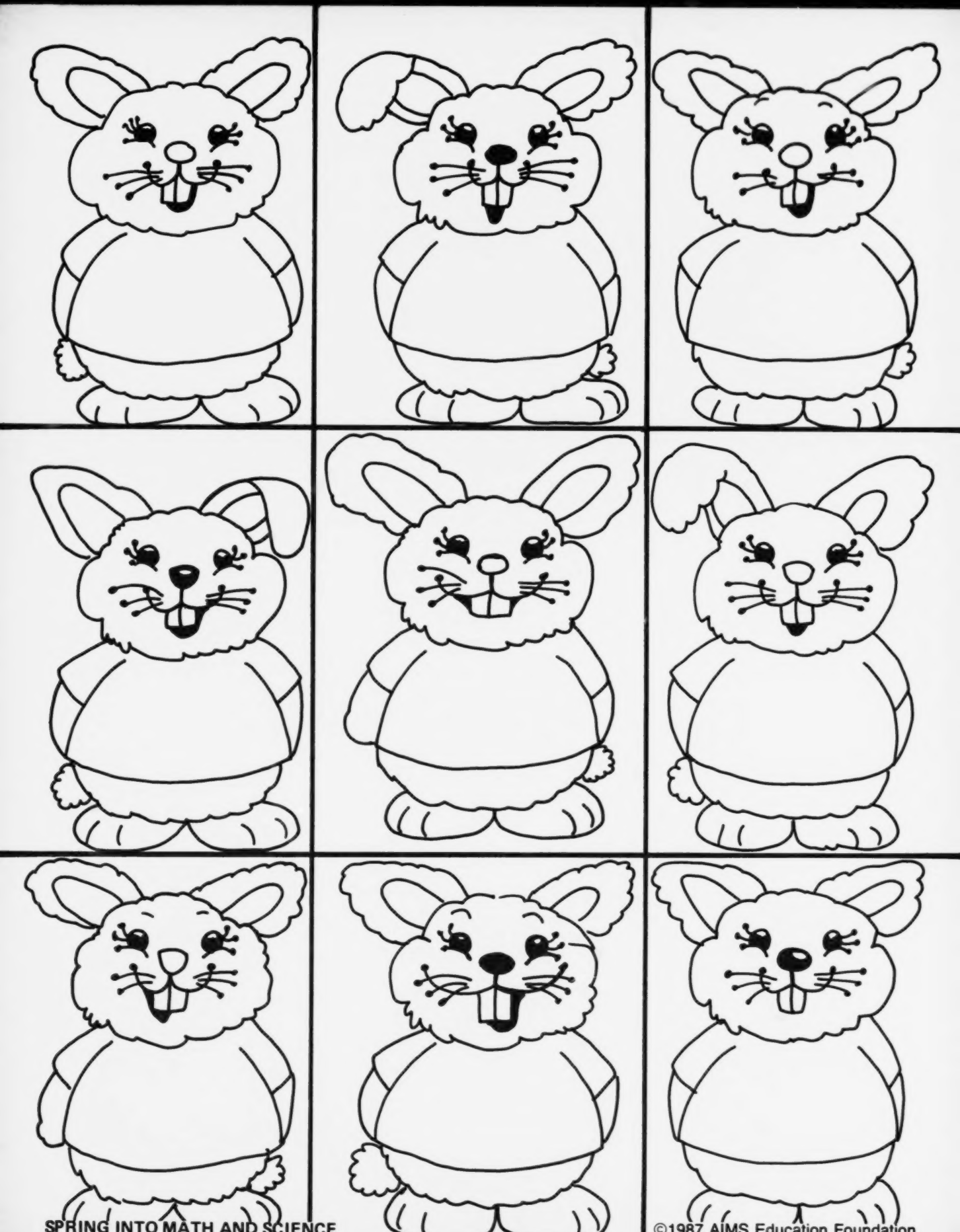

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A-Tisket A-Tasket
Grow Your Own Basket

I. **Topic Area**
Plant Life

II. **Introductory Statement**
Students will learn how to plant and grow grass seed.

III. **Key Question**
Is there any way we could grow a "lawn" in our classroom?

IV. **Math Skills**
a. Appyling formulas
b. Estimating
c. Measuring
d. Observing
e. Recording data
f. Variables

Science Processes
a. Observing and classifying
b. Measuring
c. Estimating
d. Controlling variables
e. Gathering and controlling data
f. Applying and generalizing

V. **Materials**
- 1 small box grass seed
- 1 small berry basket for each child
- plastic wrap
- 2 large bags potting soil
- 1 large pipe cleaner for each child
- varying colored construction paper strips

VI. **Background Information**
1. It will take approximately 7-10 days for the grass to begin to sprout. The baskets will need to receive daily sun and water.

VII. **Management**
1. The weaving of the baskets will take approximately 30 minutes and can be conducted in large or small groups.
2. The actual planting is best conducted in small groups of 4-5 children with direct teacher supervision. This will take approximately 30 minutes.

VIII. **Advanced Preparation**
1. Purchase potting soil and grass seed.
2. Instruct each child to bring a plastic berry basket from home.
3. The teacher will need to measure and cut the construction paper into strips that will fit the baskets to be used. Be sure all the baskets are a uniform size.

IX. **Procedure**
Whole Class
1. Each child will receive a basket and 2-3 paper strips.
2. The children will weave the paper in and out the openings of the basket, creating a checkerboard pattern.

Small Groups
1. Line each berry basket with plastic wrap and fill ⅔ full with potting soil. Pass out the grass seed and show how to plant the seed—approximately ½ to 1 inch deep.
2. Place the baskets in a sunny place and water daily.
3. Have the children record on an experience chart the day the grass was planted, when it sprouted, the amount of water and sunshine needed, it's growth pattern, etc.
4. When the grass has grown to the desired height, attach a colored pipe cleaner to the basket, and send home.

X. **Extensions**
1. Have a contest to see who can grow the longest grass, the greenest grass, etc.
2. Have the students take their baskets home and care for them. After one month have the class bring them back to school to check the growth process.

XI. **Discussion**
1. What things did we need to grow our baskets? Could we grow grass without any of these things?
2. What other things could we grow in a basket?

XII. **Curriculum Coordinates**
Language Arts
1. Have the children write stories about how it would feel to be a seed.

Art
1. As a May Day activity, have the children make tissue paper flowers to place in the basket to resemble a garden.
2. At Easter time, dyed eggs could be added to each basket.
3. Each basket could become an Easter basket by adding a hatching egg:

   Purchase commercially produced yellow pompoms, allowing two per child. Glue the two together in snowman fashion, and glue in place in ½ an egg shell. Add a construction paper beak and two eyes and you will have an Easter chick.

Science
1. Use this activity as part of a unit on plants.

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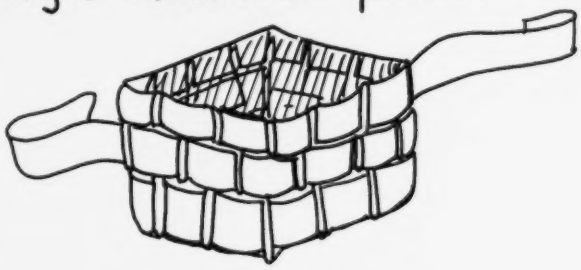
A-Tisket A-Tasket
Grow Your Own Basket

Whole Class - 30 minutes

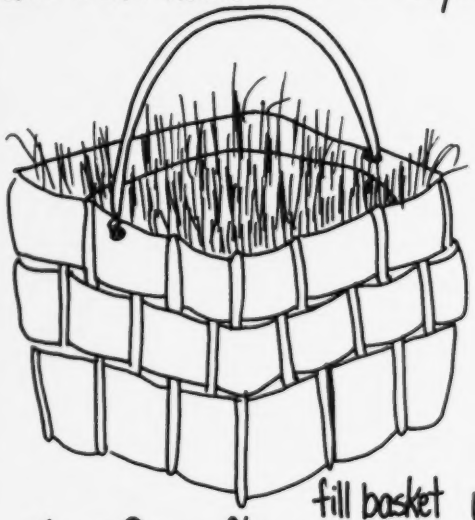
1. Each child will receive a basket and 2-3 paper strips.
2. Children will then weave the paper in and out of the openings of the basket creating a checker board pattern.



Small Group

3. Line each basket with aluminum foil, fill 2/3 full with potting soil. Pass out grass seed and show how to plant the seeds ½ to 1 inch deep.
4. Place the baskets in a sunny place and water daily.
5. Record observations on an experience chart.
6. When the grass has grown to the desired height - attach a colored pipe cleaner to the basket and send home. (7-10 days)

A Tisket A Tasket - Grow My Own Basket				
Name	Day Planted	Day sprouted	Water Needed	Sun Needed



fill basket with:
Tissue Paper flowers
Dyed eggs
Pom Pom chicken in ½ egg shell

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Feet Findings

I. **Topic Area**
Measurement

II. **Introductory Statement**
Students will use non-standard measure to measure distance.

III. **Key Question**
How can you use your feet to find out the distance from one place to another?

IV. **Math Skills**
a. Counting
b. Logical thinking
c. Measuring length
d. Recording data
e. Generalizing
f. Interpreting data
g. Observing

Science Processes
a. Gathering and recording data
b. Interpreting data
c. Measuring
d. Controlling variables
e. Applying and generalizing

V. **Materials**
• Student page #1

VII. **Management**
1. This activity will take one class period of 30 to 45 minutes.
2. This activity is a teacher-directed activity for a whole class group.

VIII. **Advanced Preparation**
1. Duplicate student page #1 (at end of investigation).

IX. **Procedure**
1. Discuss the Key Question with the children—How can you use your feet to find out the distance from one place to another?
2. Ask two students to give an example of how to measure a certain distance with their feet. Try to ask two students with different height or shoe size. After the example is given, ask all students, "What happens when two different people take different-sized steps?"
3. Lead the children to realize that there needs to be a control on the way to measure with their feet. (See *X. Discussion.*)
4. Ask the children to think of different ways to control the way to measure with their feet. (See *X. Discussion.*) After this discussion, tell the students that this time they will control the measuring by walking heel to toe.
5. You may want to ask all students to demonstrate to you that they understand what heel to toe means.
6. Introduce student page. Explain that each student will start measuring from their own desk to each object in the room.
7. Assist students to record, on the student page, the steps counted to each object.
8. After all student pages have been completed, ask students to share their largest/smallest amount of steps counted. Compare several childrens' answers and ask the question, "Why are the number of steps taken different for different people, even when they are going to the same place?"
9. After the children have discovered that two people may start from different places, (and therefore the steps counted are different), ask the question, "If two people start from the same place, could their number of steps be different? Why does this happen?"
10. To culminate this activity, ask students to think of ways to make all measurements fair (standard). (See *X. Discussion.*)

X. **Discussion**
1. How many steps did you take to...?
2. What was the largest/smallest amount of steps you took?
3. What happens when two different people take different-sized steps?
4. Why are the number of steps taken different for different people, even when they are going to the same place?
5. If two people start from the same place, could their number of steps be different? Why does this happen?
6. What can we do to make measuring more fair?
7. What are some of the things we can do to control the way we measure with our feet?
8. What could we use to always have fair measurements?

XI. **Extensions**
1. Repeat activity with students using giant steps, teeny steps, hops, etc.
2. Extend activity to include outdoor objects. *Do not use objects where the children will have to count above 100.
3. Ask students to estimate the number of steps taken to a given object and then measure the real number of steps.

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XII. **Curriculum Coordinates**

Language Arts

1. Students make a classroom book titled—"My Feet Can..."
2. Read *The Foot Book* by Dr. Seuss.

Art

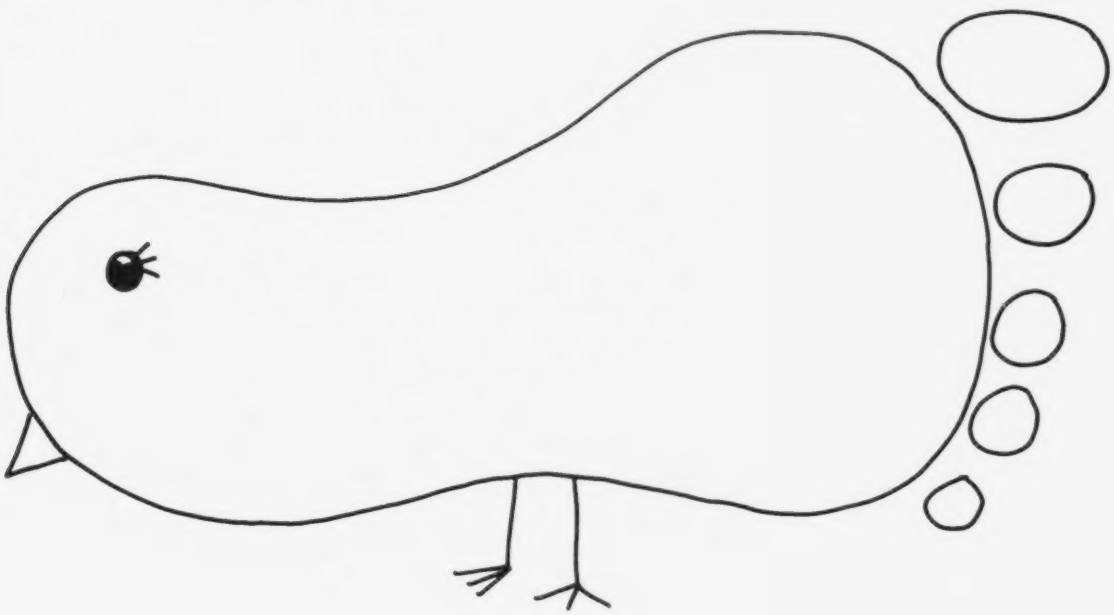
1. As a classroom project, each student steps into different colored tempera paint and walks across butcher paper (6 to 8 feet long) to make footprints. Be certain to have newspaper and tub of soapy water with towels at end of butcher paper. CAUTION: Feet are slippery when student first steps out of paint. An adult should be present to guide the students to the butcher paper.
2. Students make a bird from footprint (see example at end of investigation—pattern sheet #2.) Students place foot in paint, make footprint on white construction paper. When paint dries, students add eye, beak and feet. Cut and mount on colorful construction paper.

Music

1. Sing "Hokey Pokey" emphasizing the feet parts.

Physical Education

1. Set up a relay where the students use activities requiring only feet (running, hopping, jumping, skipping, etc.).
2. Play "Follow the Leader" using only feet activities.
3. Play "Mother, May I?" using heel to toe steps, giant steps, teeny steps, etc.



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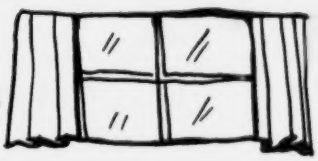
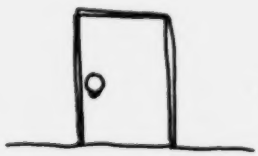
Name _____

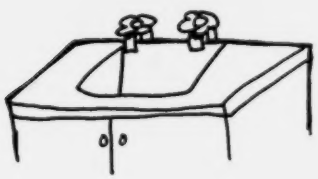
Feet Findings

How many feet from your desk to . . . . . .

1. the teacher's desk? _____

2.  the windows? _____

3.  the front door? _____

4.  the sink? _____

5.

the calendar? _____

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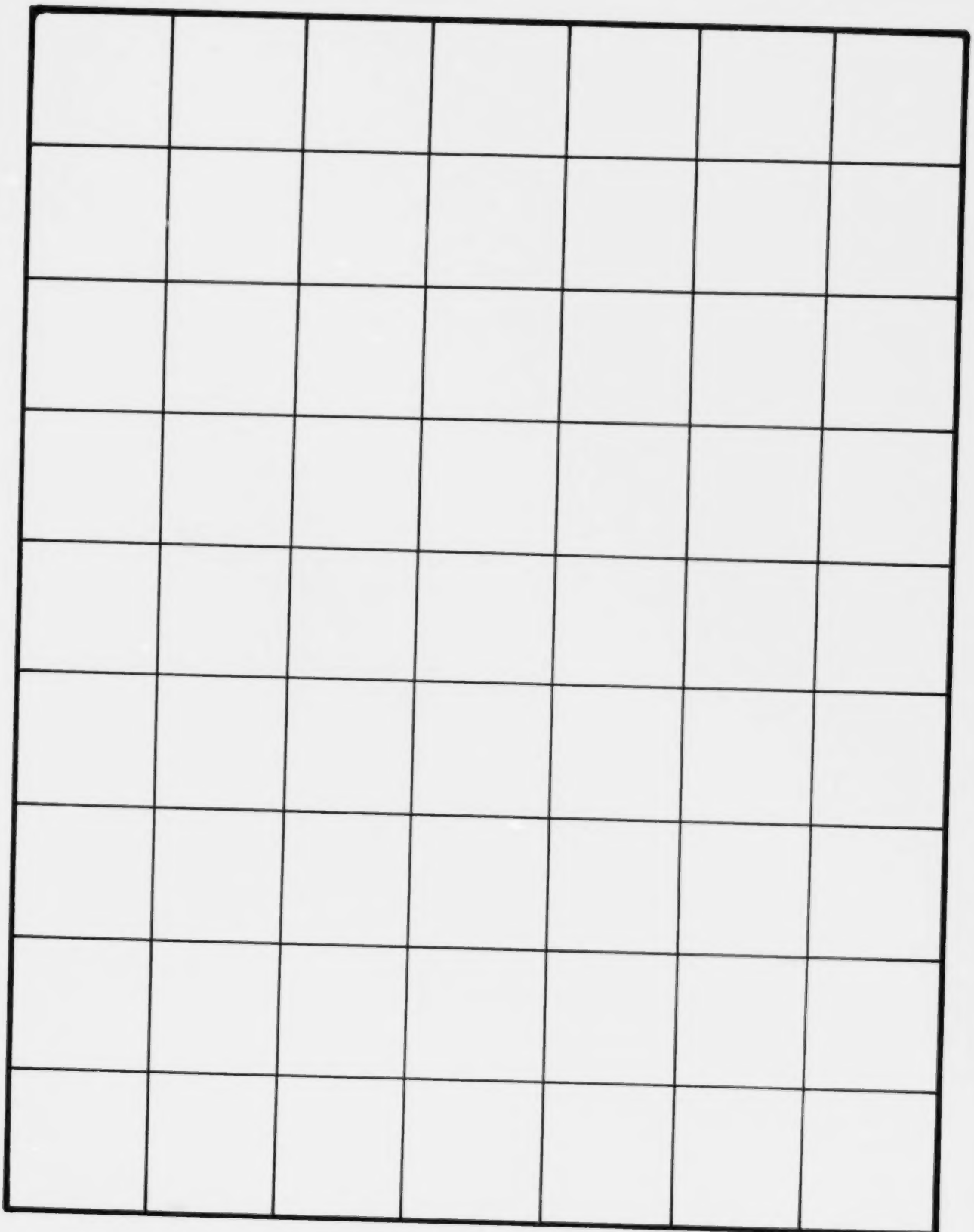
1" square

Animal Crackers

I. **Topic Area**

Sorting and categorizing

II. **Introductory Statement**

Students will sort animal crackers into groups. Students will estimate the number of cookies in one box.

III. **Key Question**

How can we find out how many kinds of animals are in a box of animal crackers?

IV. **Math Skills**

a. Counting
b. Estimating
c. Sorting
d. Whole number computation

Science Processes

a. Observing and classifying
b. Estimating
c. Gathering and recording data
d. Interpreting data

V. **Materials**

- One box of animal crackers for each group of 6-8 students
- One estimation sheet for each group (see pattern sheet #1)
- 16 copies of cages for each group (see pattern sheet #2)

VI. **Background Information**

Animal crackers vary by brand. Be sure that the animal crackers you plan to use clearly show which animal is being represented.

VII. **Management**

1. This is small group teacher-directed activity.
2. Allow about 20 minutes for each group.

VIII. **Advanced Preparation**

1. Make one copy of estimation sheet for each group. (See pattern sheet #1)
2. Make 8-10 copies of cages (pattern sheet #2). Cut papers in half so there is one cage per sheet. (These papers can be reused with each group.)

IX. **Procedure**

1. Show the box of animal crackers to the group. Have the students talk about what might be inside.
2. Have the students estimate the number of crackers in a box. Record these guesses on the estimation sheet.
3. Open the box and have the children count the cookies. Record the number on the estimation sheet and circle it. Compare the estimations to the actual amount.
4. Ask the key question: How can we find out how many kinds of animals are in a box of animal crackers?
5. Have the students name the animals they recognize. Write each animal name on a cage and have the students sort the animals into the proper cages.

X. **Discussion**

1. How many kinds of animal crackers were in the box?
2. Which cage has the most? The fewest?
3. Do any cages have the same number of animals?
4. If we combined the animals in these cages (indicate 2 or 3 cages), how many would there be altogether?
5. Would another box of animal crackers be exactly the same as this one? What might be different?

XI. **Extensions**

1. Combine the data from each group and make a class graph that shows how many of each kind of animal were found.
2. Have the children think of other ways to sort the crackers.
3. Compare the number of cookies found in each box. Discuss the meaning of the weight shown on the box.

XII. **Curriculum Coordinates**

Language Arts

1. Combine this activity with a unit on zoo animals.
2. Have the students choose an animal they like best and write or dictate a few sentences on why they like it. Make a class book.

Art

1. Students can draw or paint pictures of animals. These can be cut out and put into paper cages for a bulletin board display.
2. Make three-dimensional animals out of construction paper. Roll the paper into a cylinder and staple it. To the cylinder body, add a face, paws, and a tail. Use yarn, pipe cleaners, or paper to add features.

Music

1. "Goin' to the Zoo."
2. Songs about animals.

Physical Education

1. Have the students move like the animals do: jump like a kangaroo, run like a tiger, walk like an elephant, etc.

PATTERN SHEET # 1

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PATTERN SHEET #2 SORTING CAGES

59

60

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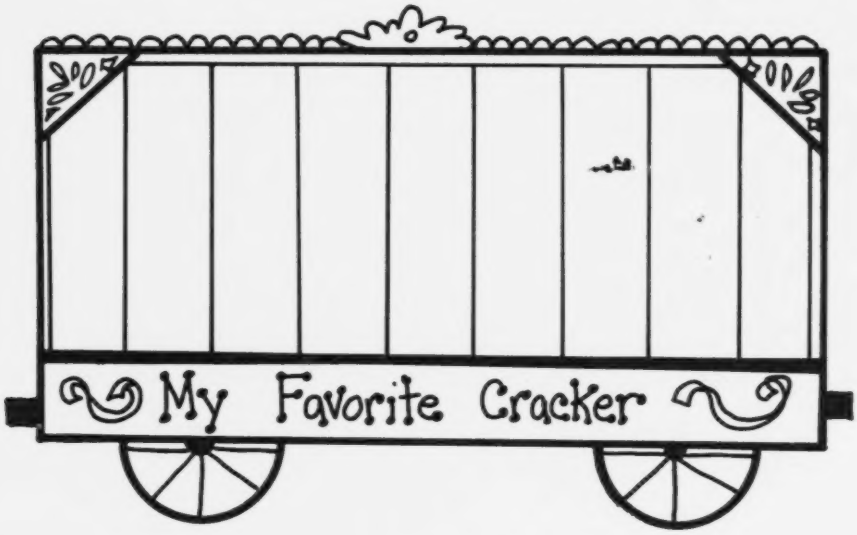
Animal Crackers

Five animal crackers from the grocery store,
I ate one, now I only have four.
Four animal crackers, tasty as can be,
I ate another, now I only have three.
Three animal crackers and what did I do?
I ate another, now I only have two.
Two animal crackers can be lots of fun,
I ate another, now I only have one.
One animal cracker and now I'm done,
I ate that one, so now I have none.

Janice Nikoghasian © 1984



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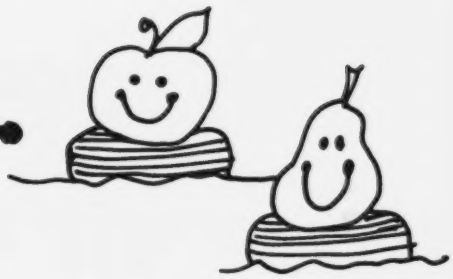
Floating Fruit



I. **Topic Area**
Food/Water

II. **Introductory Statement**
The students will find out which fruits float.

III. **Key Question**
What do you think would happen if we put fruit in water?

IV. **Math Skills**
a. Graphing
1. Interpreting data
2. Counting
b. Predicting
c. Sorting

Science Processes
a. Observing and classifying
b. Applying and generalizing
d. Interpreting data
d. Gathering and recording data

V. **Materials**
- A variety of different fruits
- One large, open container for water
- Float/Sink prediction cards
- Float/Sink graph

VII. **Management**
1. Allow 20 minutes for this activity.
2. This activity can be used as a small group teacher-directed lesson so that each child gets a turn, or it can be used as a whole group lesson.

VIII. **Advanced Preparation**
1. Prepare the prediction cards. (See pattern sheet page #1.)
   a. To make the cards quickly, simply duplicate the pattern sheet and fold it in half. Make one copy for each student in the group.
   b. For reusable cards, make copies of the pattern sheet and cut them in half. Paste "sink" on one side of 6" × 9" construction paper or tagboard. Paste "float" on the other side. Laminate cards or cover them with clear plastic.
2. Prepare the float/sink graph.
3. Collect fruit.
4. Fill container with water.

IX. **Procedure**
1. Show the fruit to the group of children. Ask the children to tell you what is the same about all of the items.
2. Discuss the meaning of "float" and "sink."
3. Give each child a float/sink prediction card. Make sure that each child can tell you which side shows "float" and which side shows "sink."
4. Choose one fruit and let the children feel it. Have them indicate with their prediction cards whether the fruit will float or sink. Ask the children to explain their predictions.
5. Discuss the predictions. Do more children think the fruit will float or do more think it will sink?
6. Have a child place the fruit in the water. The children tell whether it floats or sinks.
7. The child removes the fruit from the water and places it on the appropriate side of the graph.
8. Repeat the above procedure with the rest of the fruit.
9. Discuss the results.

X. **Discussion**
1. What does the graph show?
2. Did all of the fruit float?
3. Is that what you thought would happen? Why or why not?
4. If we had a _____ (name a fruit that was not used), do you think it would float?

XI. **Extensions**
1. Try the above activity using the parts of each fruit. Will the skin float? The seeds? Etc.
2. Could you find a fruit that would not float?
3. Try this activity using vegetables instead of fruit.
4. Set up a float/sink station where the students can try other materials to see which float and which sink.

XII. **Curriculum Coordinates**
Language Arts
1. Make a class book "My Favorite Fruit."
Art
1. Make fruit prints using tempera. Cut fruit in half, dip in paint, then press on paper. After cutting the fruit, allow it to dry slightly so that the paint will adhere.
2. Make a fruit collage using pictures of fruit cut from magazines.

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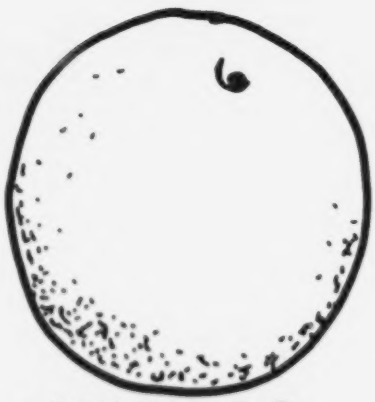
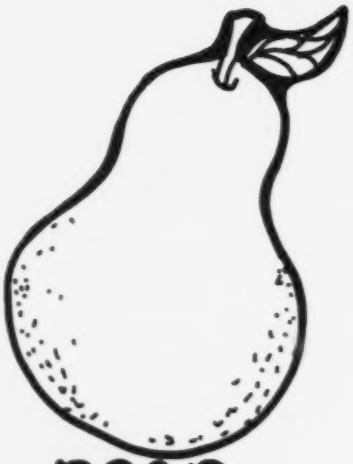
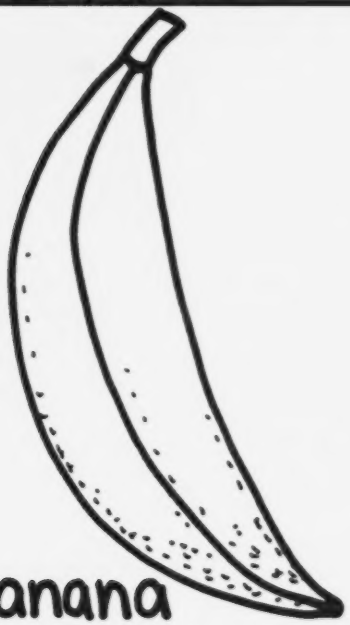
apple



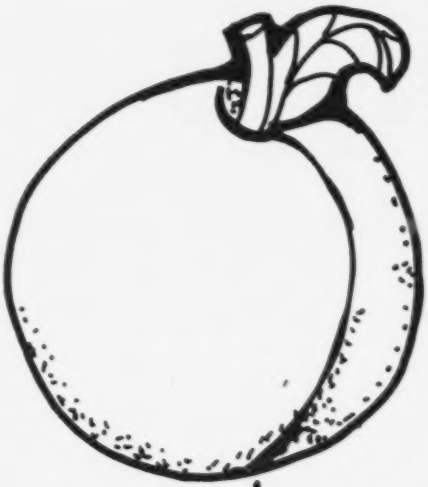
orange



pear

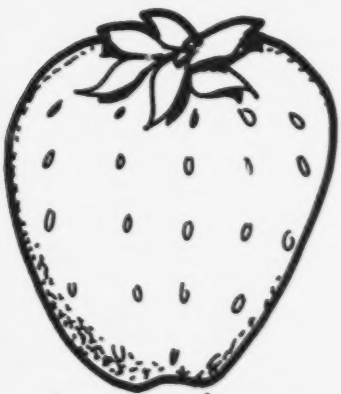


banana



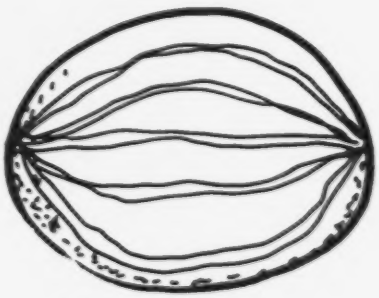
peach

plum

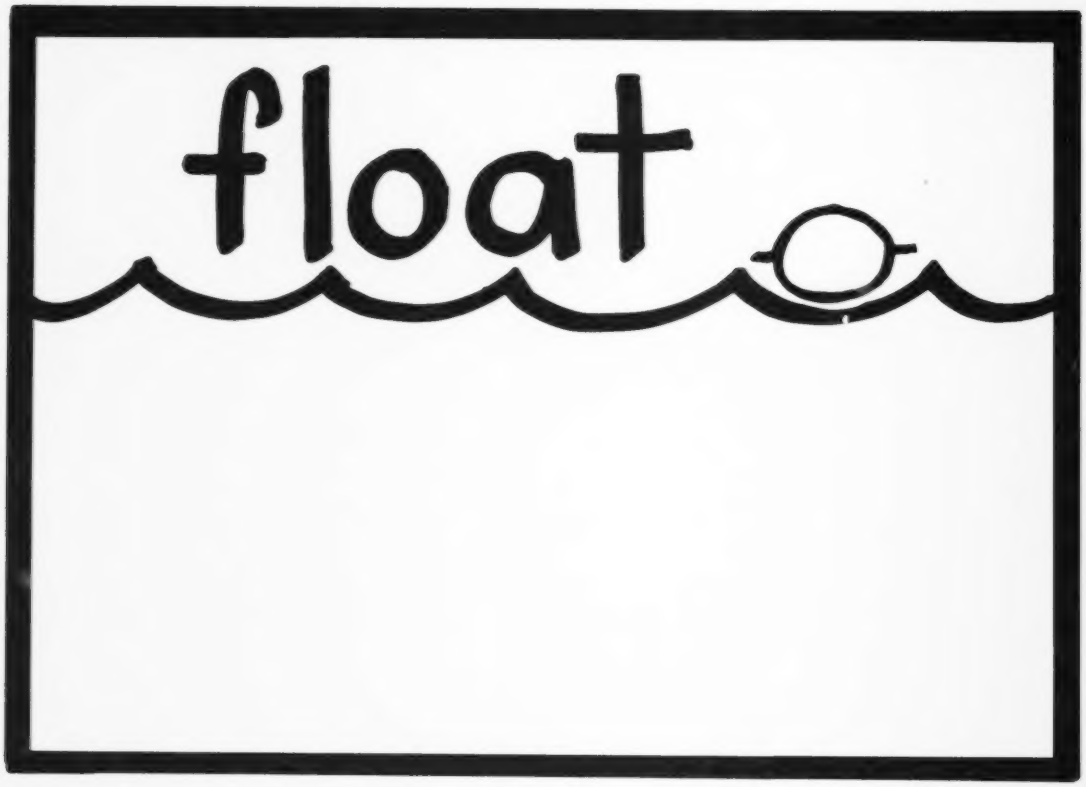


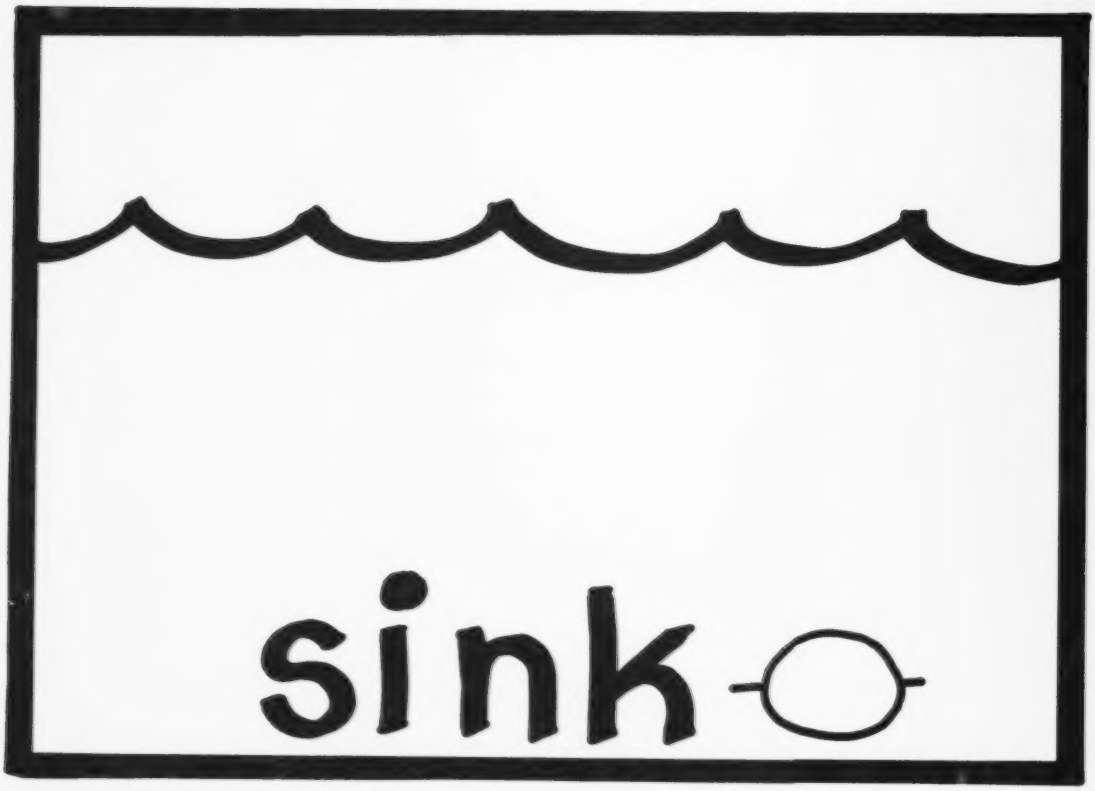
strawberry

cherry



watermelon


float


sink

name: _____

Draw a picture of which fruit:

floats

sinks

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What Do You Sink Will Float

I. **Topic Area**
Water

II. **Introductory Statement**
Students will find out if an object floats or sinks.

III. **Key Question**
What objects will float? What objects will sink?

IV. **Math Skills**
a. Attributes
b. Counting
c. Generalizing
d. Graphing
e. Interpreting data
f. Logical thinking
g. Observing
h. Predicting
i. Problem solving
j. Recording data
k. Sorting

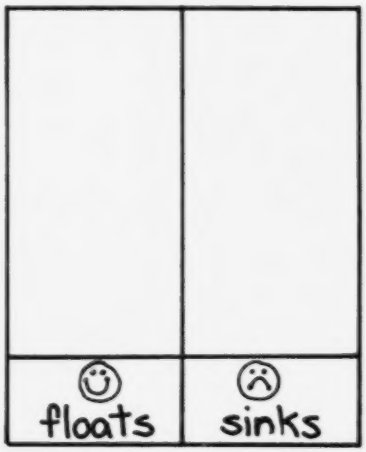
Science Processes
a. Observing and classifying
b. Estimating
c. Gathering and recording data
d. Interpreting data
e. Applying and generalizing

V. **Materials**
- large glass container for water
- water
- objects for testing: crayon, paper clip, marble, rubberband, pencil, wooden stick, cotton ball
- student page and crayons for writing (see "What do you sink will float?" graph page)
- tagboard for picture graph and gummed stars
- paper towels

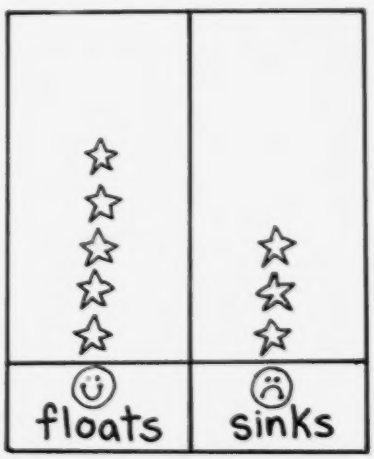
VI. **Background Information**
1. The children should understand these vocabulary words; *float, sink, heavy, light.*

VII. **Management**
1. Place children in small groups of 3 to 4 children. Work with each group individually.
2. This activity should take 20 minutes.

VIII. **Advanced Preparation**
1. Fill the glass container halfway with water.
2. Have paper towels nearby for spills.
3. Have objects out (listed in materials) for each child.
4. Have a student page and crayon for each child.
5. Prepare a tagboard graph for each group of children as follows:



IX. **Procedure**
1. Pass out the students' pages and crayons.
2. Hold up the first object (example: pencil).
3. Ask the children to predict whether the object will sink or float.
4. The children should record on their student sheet: If they think the object will float, color in the box next to that object under the word *float*. If they think the object will sink, color in the box next to that object under the word *sink*.
5. Let a child test the object by placing it in the water.
6. If an object floats, have a child put a star in the "float" column on the big tagboard graph. If an object sinks, have a child put a star in the "sink" column on the big tagboard graph.



7. Continue this procedure with all the objects.
8. Have the children compare the predictions on their student pages with the actual results shown on the big tagboard graph. Ask: "Are your predictions the same as the actual results?"
9. Discuss the graph:
"How many objects floated?" "How many objects sank?"

X. **Discussion**

1. Why did some of these objects float?
2. Why did some of these objects sink?
3. If you had a boat, what would you want it to be made of...metal or wood? Why?

XI. **Extensions**

1. Let the children choose other objects to predict and test whether they would float or sink.

XII. **Curriculum Coordinates**

Language Arts

1. Show the children pictures of: a sailboat, submarine, treasure box on the bottom of the ocean, bottles floating in the water, etc. Ask them to describe the picture using these words: sink, float, heavy, light.
2. Read: "Little Toot."

Art

1. Make a boat out of aluminum foil.
2. Make a sailboat out of a bar of soap, a popsicle stick, a paper sail, and glue.

Music

1. Sing: "Row, Row, Row Your Boat."
2. Pantomime a rowing boat to the beat of slow music.

Physical Education

1. Practice different swimming strokes:
   a. breast stroke
   b. crawl
   c. back stroke

Social Studies

1. Discuss different kinds of boats: submarine, sailboat, rowboat, canoe, kayak, etc.

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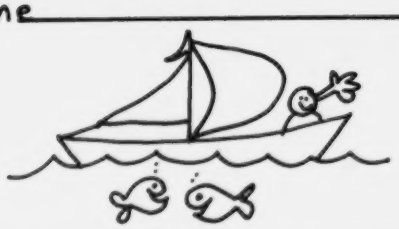
name _____

What do you think will float?



Name of object	float	sink
wooden stick		
paper clip		
cotton ball		
rubber band		
crayon (RED)		
marble		
pencil		

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You Are My Sunshine

I. **Topic Area**
Solar Energy

II. **Introductory Statement**
Students will discover the effect of the sun's heat.

III. **Key Question**
How can we cook a hot dog using the sun?

IV. **Math Skills**
a. Timing
b. Recording data
c. Graphing
1. Counting
2. Comparing
3. Set theory
4. Whole number computation

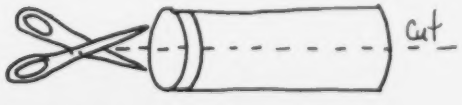
Science Processes
a. Observing
b. Measuring
c. Estimating
d. Controlling variables
e. Gathering and recording data
f. Interpreting data
g. Applying and generalizing

V. **Materials**
- small piece of black construction paper
- hot dog, uncooked
- homemade hot dog cooker (instructions included in "Advanced Preparation")
- large piece of tagboard and "sun" markers for the graph (see "sun" markers page)

VI. **Background Information**
1. Children should be familiar with these vocabulary words: energy, work, light, heat, sun, solar.

VII. **Management**
1. Do this experiment on a bright, clear, sunny day.
2. This experiment should take about three hours.

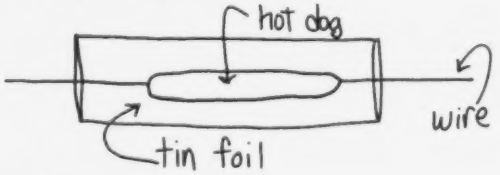
VIII. **Advanced Preparation**
1. Make this homemade hot dog cooker ahead of time:
Materials needed:
large Quaker Oatmeal box
tin foil
wire
masking tape
scissors
a. Empty the oatmeal box
b. Put the lid of the oatmeal box back on and tape it in place.
c. Cut the box, including the lid, in half lengthwise:



d. Cover the inside of one of the halves completely with tin foil, shiny side up.
e. Run a piece of wire through one end of the box and extend it to run through to the opposite end:

f. When ready to cook the hot dog, slip the wire out of the box, insert the wire through the hot dog, and insert the wire back into the end of the box.

view from above:



IX. **Procedure**
1. Ask the students if they all had a good breakfast and feel like working in class today.
2. Draw an analogy between eating breakfast which gives them energy and their ability to do things in class which is work.
3. Ask: "Do you feel like working when you don't eat breakfast?" "Do you feel like working when you eat breakfast?" Tell them food gives us energy to do things.
4. Ask the students to stand up, push in their chairs behind them, stand there for a moment, then pull their chairs back out and sit down.
5. Tell them they just used "energy."
6. Take the students outside to look for energy.
7. Lay the black construction paper in a sunny spot. After a few minutes have the students touch the paper. It feels warm; this is energy. Light energy has struck the black paper and the black paper turned it into heat energy.
8. Show the children the hot dog cooker and discuss the materials needed to make it. Put a hot dog in the cooker and aim it to the sun. Ask if anyone knows how the hot dog cooker will help the hot dog to heat up and cook and ask from where is the energy coming? Answer: the sun!
9. Show the students how the light energy comes in and strikes the aluminum foil and is reflected back onto the hot dog.

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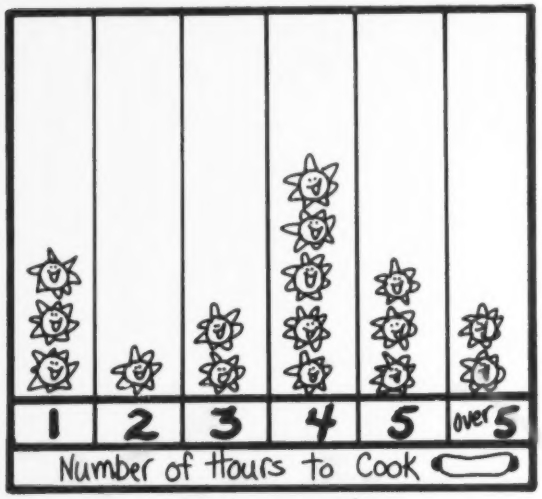
10. Tell the students that the hot dog will take the light energy and make it into heat energy and that's the way the hot dog will be cooked.
11. Ask the children to predict how many hours they think it will take the sun to cook the hot dog. Record the predictions on a graph such as this:



Prediction Graph

12. Check the hot dog every hour. After three hours, the hot dog should be sufficiently heated and cooked.
13. Have the students note the changes in the appearance of the hot dog. It should be darker in color, it should be "sweating" moisture, and it should feel warm to the touch.
14. Let the students feel the warmth of the hot dog and then cut the hot dog into small pieces so that each student can taste a bite of meat.
15. As the students are eating, again point out to them how the light energy of the sun was made into heat energy to heat the hot dog and that they are using and getting food energy when they eat it.
16. Compare the length of time it took the hot dog to cook in the sun with the children's predictions.

X. **Discussion**
1. What cooked the hot dog?
2. Can we cook other foods in the sun?
3. What do we normally use to cook foods?
4. Does the sun cook foods faster or slower than other methods of cooking?

XI. **Extensions**
1. Have each child construct their own hot dog cooker and cook their own hot dog in the sun.
2. Cook other foods in the sun such as eggs.
3. Send directions for making a "homemade hot dog cooker" home with each student. Have them cook hot dogs for their families! (see "homemade hot dog cooker" page)

XII. **Curriculum Coordinates**

Language Arts

1. Read *How the Sun Was Brought Back to the Sky* by Ginsburg.

Music

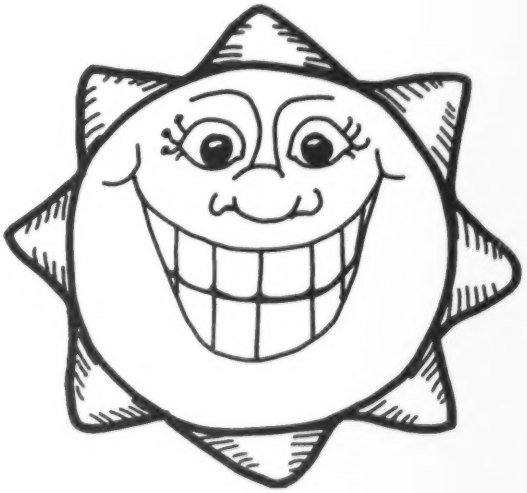
1. Sing "You Are My Sunshine".

Physical Education

1. Pantomime a "rising sun" and a "setting sun."

Art

1. Make a sun from wax paper and yellow crayon shavings.



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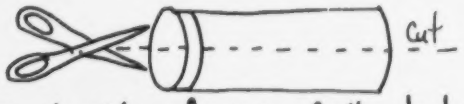
You Are My Sunshine

Homemade Hot Dog Cooker

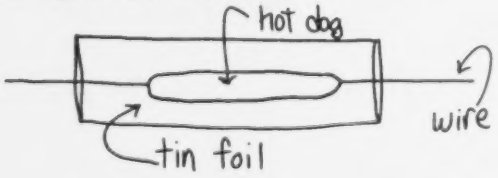
Needed: large Oatmeal box
tin foil
wire
masking tape
scissors

1. Empty oatmeal box.
2. Put the lid of the box back on and tape in place.
3. Cut the box, including the lid, in half lengthwise.



4. Cover the inside of one of the halves completely with tin foil, shiny side up.
5. Run a piece of wire through one end of the box and extend it to the opposite end.

6. When ready to cook the hot dog, slip the wire out of one end of the box, insert the wire through the hot dog, and put the wire back into the end of the box.



You may want to cover the cooker with plastic wrap to keep dust out while cooking.

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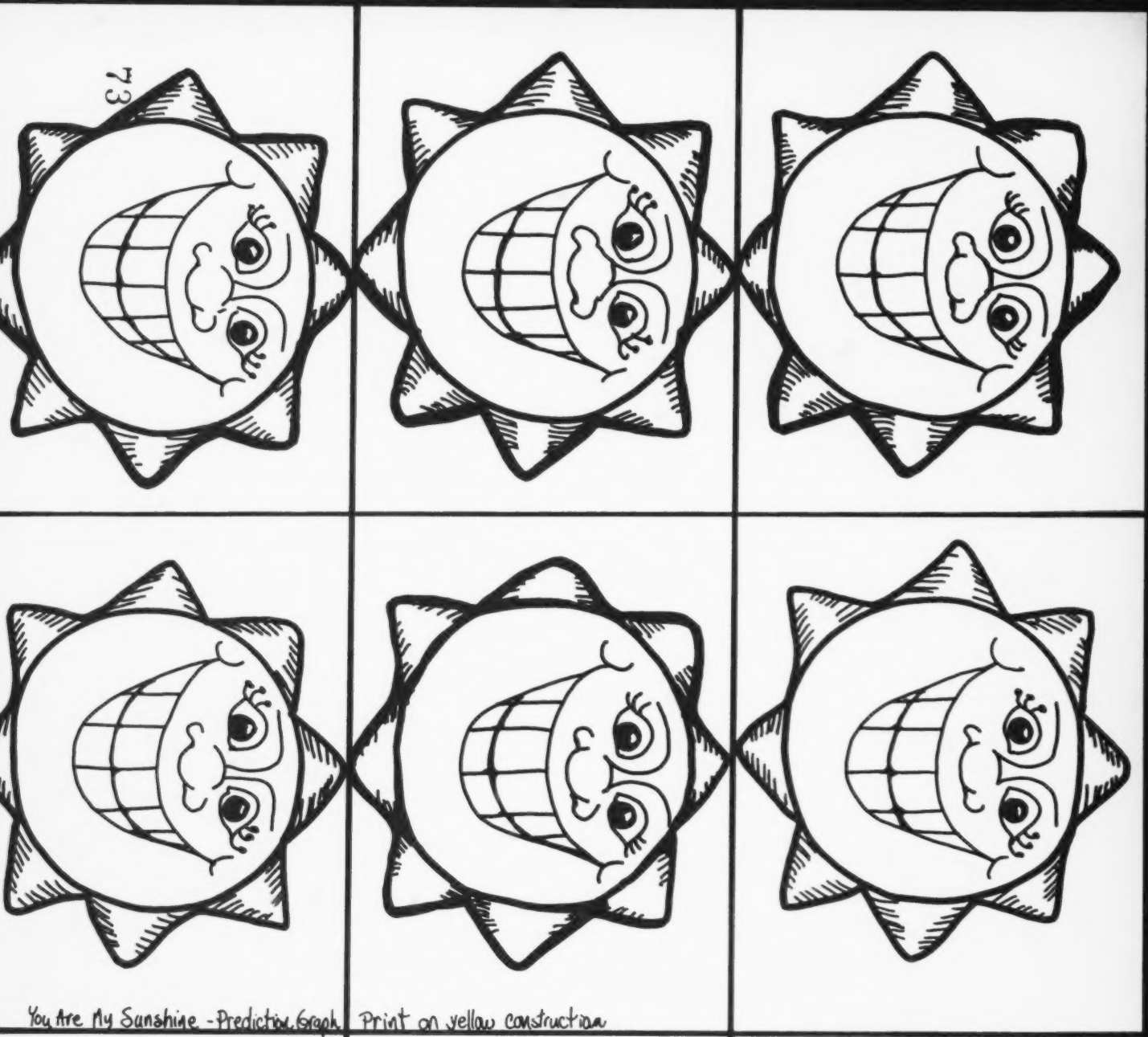
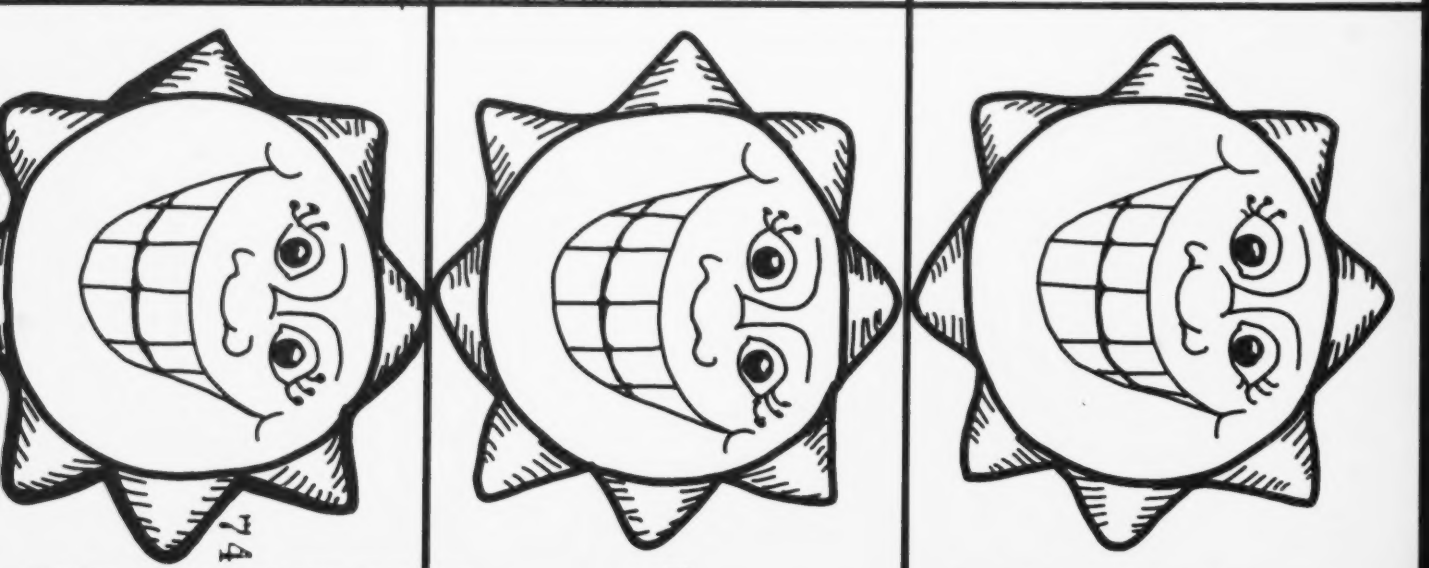


You Are My Sunshine - Prediction Graph. Print on yellow construction



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Making Ice Cream

I. **Topic Area**
Changing Liquids to Solids

II. **Introductory Statement**
Students will make homemade ice cream.

III. **Key Question**
How do you make homemade ice cream?

IV. **Math Skills**
a. Attributes
b. Applying formulas
c. Fractions
d. Graphing
e. Measuring volume
f. Observing
g. Predicting
h. Timing

Science Processes
a. Observing and classifying
b. Measuring
c. Comparing

V. **Materials**
- electric ice cream freezer
- two 7 lb. bags of ice
- rock salt
- measuring cup
- measuring spoon

Ice Cream Recipe
1 quart Half & Half
4 cups whipping cream
3/4 cup sugar
1 tablespoon vanilla
1/8 teaspoon salt

VI. **Background Information**
1. The teacher should be familiar with operating the ice cream freezer.

VII. **Management**
1. It will take fifteen minutes to mix the ingredients.
2. It will take approximately one hour to freeze the ice cream in an electric freezer.
3. This recipe will serve thirty students one small scoop of ice cream.

VIII. **Advanced Preparation**
1. Have all materials out and ready to use.

IX. **Procedure**
1. Ask the children to explain to you how to make ice cream and what ingredients are used in the process.
2. After they've told their ideas, introduce the ice cream freezer and all the necessary ingredients.
3. Explain that the class is going to make ice cream.
4. Have the children identify all the ingredients used and have them measure the ingredients and place into the ice cream freezer.
5. Cover the container holding the ingredients.
6. Attach the electric motor.
7. Have the children add ice to the outer bucket of the ice cream freezer and sprinkle with rock salt.
8. Plug in the cord.
9. Let the freezer run for an hour or until ice cream is frozen. Add more ice and salt as needed.
10. Serve and eat!

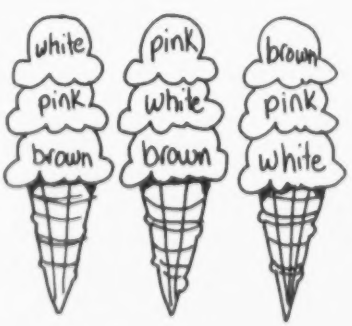
X. **Discussion**
1. What made the ice cream freeze? When was it liquid? When was it solid?
2. Why did we use rock salt?
3. What would happen if we left the ice cream out of the freezer all night? Why?
4. Name some things you've seen change from liquid to solid. (ice cubes)
5. Name some things you've seen change from solid to liquid. (butter)

XI. **Extensions**
1. Make different flavors of ice cream:
   a. chocolate (add chocolate syrup)
   b. strawberry (add thawed, frozen strawberries)
   c. peach (add fresh diced peaches)
2. Make ice cream using a hand-operated ice cream freezer.

XII. **Curriculum Coordinates**
Language Arts
1. Color an ice cream cone worksheet and tell your favorite ice cream flavor. (see "Ice Cream Colors" page)
2. Pantomime "making ice cream" with the left-over empty cartons from the ingredients.

Math
1. Make a graph of your favorite flavors of ice cream. (use ice cream scoop pattern)
2. Make a pattern with flavors of ice cream. (use ice cream scoop pattern)

Example:



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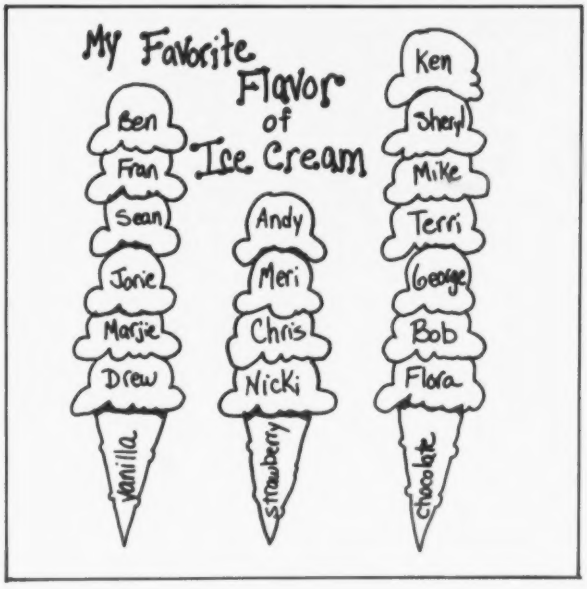
Art

1. Make a paper ice cream cone. (see "cone" and "ice cream scoops" pattern pages)

Physical Education

1. Act like melting ice cream.
2. Act like freezing ice cream.



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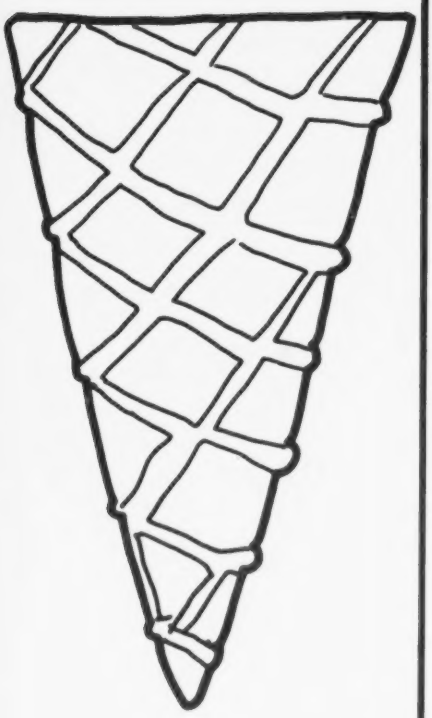

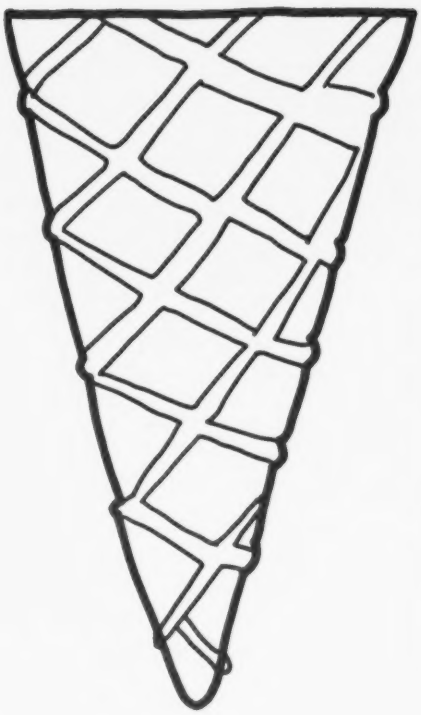

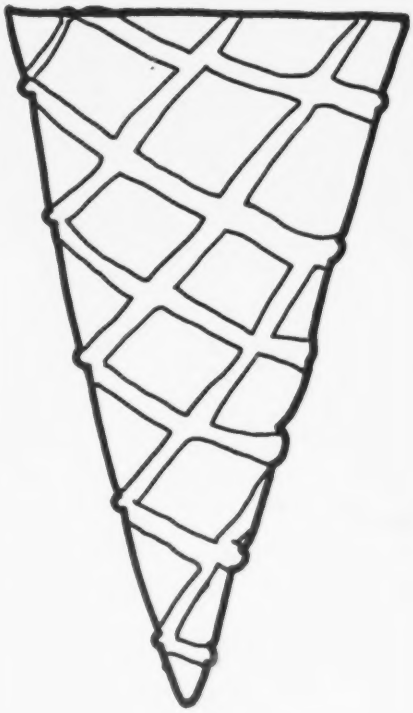

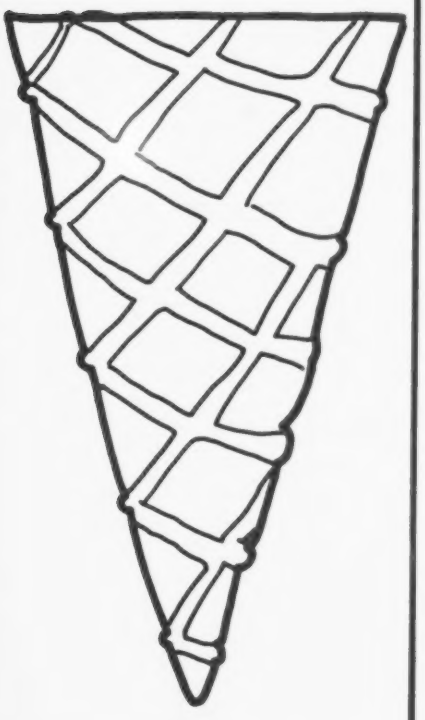

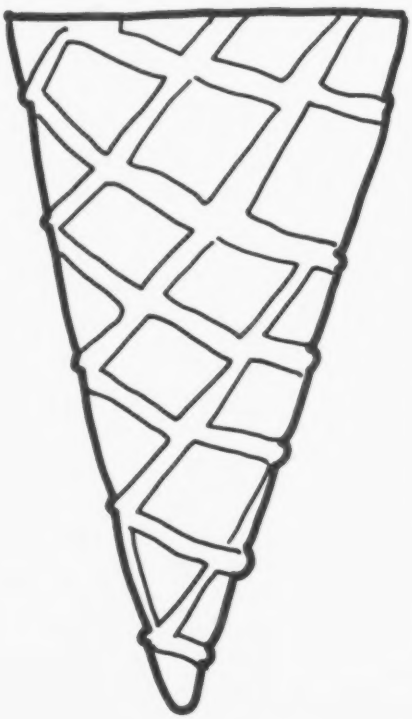

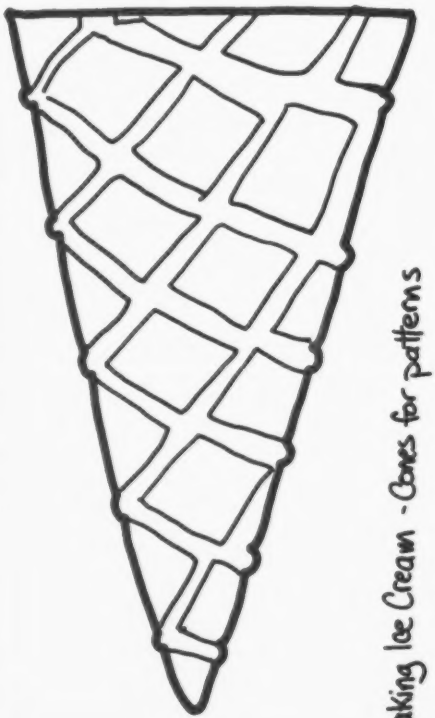

Making Ice Cream - Cones for patterns

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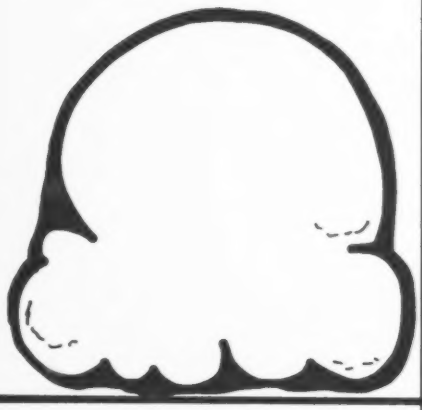
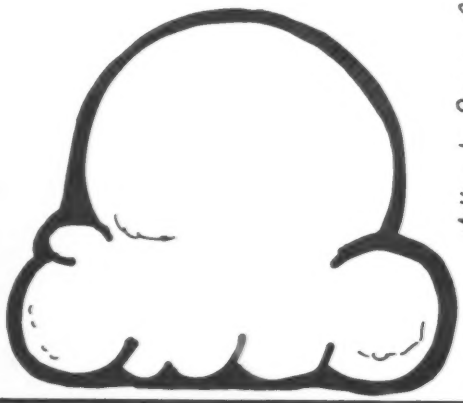
CUT OUT - GLUE ON COVES

PRINT ON WHITE, BROWN, PINK





MAKING ICE CREAM - PATTERNS

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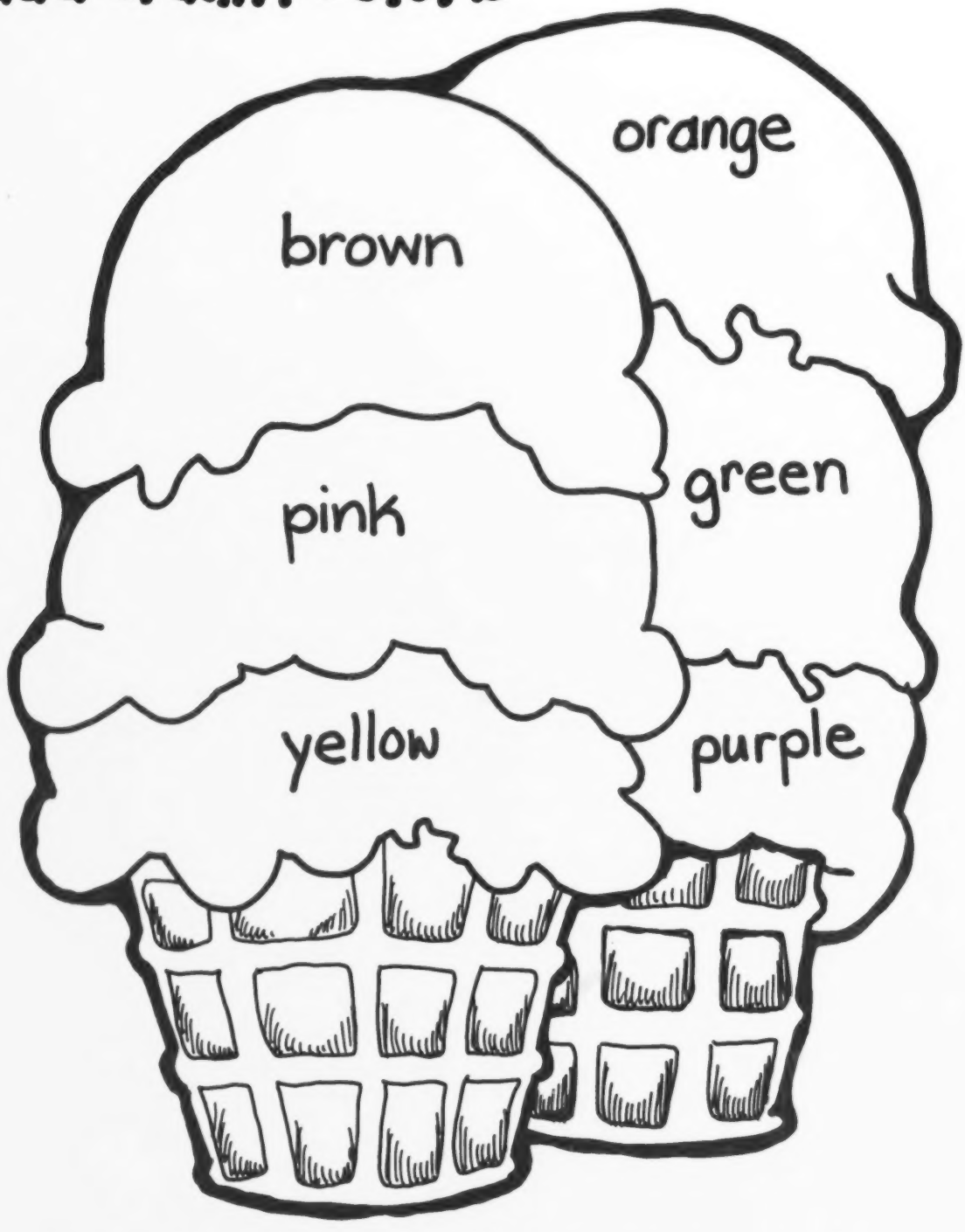
Name: _____

Ice Cream Colors



My favorite flavor of ice cream is _____.

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Blue Wave

I. **Topic Area**
Chemical Reactions

II. **Introductory Statement**
Students will discover that all liquids do not mix.

III. **Key Question**
Will all liquids mix and blend together?

IV. **Math Skills**
a. Attributes
b. Applying formulas
c. Fractions
d. Measure volume
e. Observing

Science Processes
a. Observing and classifying
b. Measuring
c. Controlling variables

V. **Materials**
- clear plastic bottle with metal cap
- one bottle of rubbing alcohol
- one small can of paint thinner
- liquid blue, red, green food coloring
- liquid soap
- cooking oil
- chocolate syrup
- *story page
- pillow
- several clear glass containers
- water
- white milk
- vinegar

VI. **Background Information**
1. Keep out of the reach of children.
2. Do not use a bottle with a plastic cap—it will be eaten away by the chemical reaction.
3. Do not breathe the fumes.

VII. **Management**
1. This is a short activity, lasting approximately fifteen minutes.

VIII. **Advanced Preparation**
1. The teacher should prepare the "Blue Wave:"
   a. Pour the rubbing alcohol into the plastic bottle.
   b. Add the paint thinner until the bottle is full.
   c. Add three to four drops of blue food coloring to the bottle.
   d. Slowly squeeze the bottle until the liquid reaches the mouth of the bottle. Put the cap on tightly immediately to form a vacuum.
   e. Shake the bottle.
   f. Wash your hands.
   g. Put the bottle under a pillow on your lap.

IX. **Procedure**
1. Tell (do not read) the following story to the children:

Once upon a time there was a sad, lonely, old man. He spent his days sitting on an old park bench, watching people go by.

One day he felt especially sad and lonely and wanted to talk to someone. Soon a very busy-looking young woman came rushing by. The old man said, "Hello," when she passed in front of him. But she was too busy to talk and kept on going. A short while later a man carrying a bag of groceries came by scurrying by. The old man said to him, "Hello, how are you?"...but the man wanted to get home quickly with his groceries and kept on walking.

Now the old man was feeling very sad and very lonely. Finally a little boy came along, saw the old man and spoke to him...first! The little boy asked the old man if he would like a bite of his peanut butter sandwich. The old man said, "Thank you," and took a bite of the little boy's sandwich. Then the little boy sat down on the bench, right next to the old man! Because you have been so kind to me," said the old man, "I will grant you three wishes. For I am not an old man, I am really an angel in disguise."

The little boy was very surprised and said, "I wish for a colorful rainbow of my very own." But the old man said, "If I give you a colorful rainbow of your very own, no one else will be able to see the rainbow and enjoy it. So the little boy wished for a bright and shiny sun of his very own. But the old man said, "If I give you a bright and shiny sun of your very own, no one else will be able to see the sun and enjoy it." Finally the little boy wished for a rolling ocean wave.

"Because there are so many waves in the ocean," the old man told the little boy, "I will grant you your wish. Go home, lay your head on your pillow tonight, and sleep well. When you awake in the morning, you shall have your ocean wave." The little boy believed the old man was an angel and did exactly what he told him to do.

...And when morning came, the little boy woke up and found a rolling ocean wave of his very own, right under his own pillow! (Now the teacher pulls out the bottle out from under her/his pillow to show the children.)

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2. Ask the children to describe what the wave looks like.
3. Explain to them how you made the wave. (You may want to actually make it in front of the class.)
4. Ask the children: "Do all liquids mix? Do some liquids mix?"
5. Show the children several clear glass containers with these liquids:
   a. water, dyed red
   b. cooking oil
   c. vinegar, dyed green
   d. chocolate syrup
   e. white milk
   f. liquid soap, dyed blue
6. Provide several empty, clear-glass containers. Ask the children to predict if these combinations *will mix* or *will not mix*.
   a. water dyed red and cooking oil
   b. cooking oil and vinegar dyed green
   c. liquid soap dyed blue and water dyed red
   d. chocolate syrup and milk
   e. cooking oil and liquid soap
7. Record the predictions.
8. Have the children combine each pair of liquids in an empty container.
9. Record the results. Do the liquids mix or not?
10. Let the children experiment and combine liquids of their choice.

X. **Discussion**
   1. Tell what liquids mix.
   2. Tell what liquids do not mix.

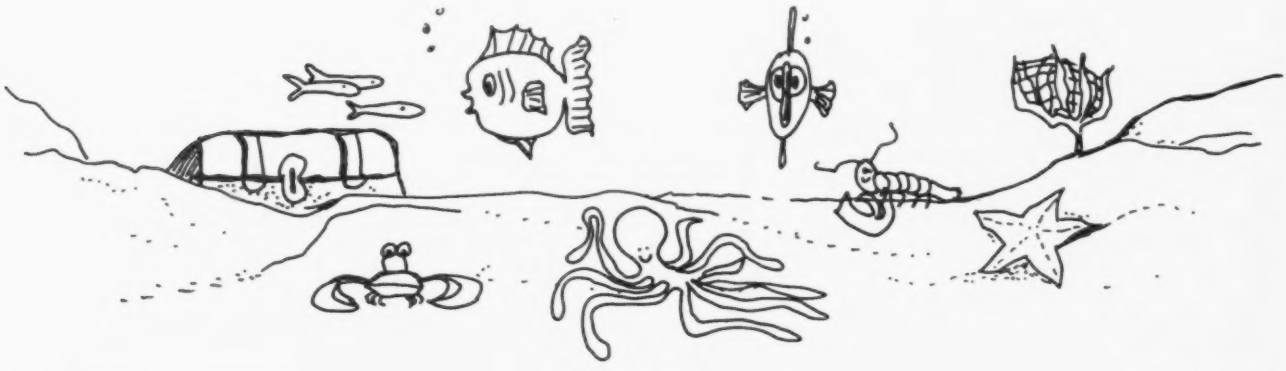
XI. **Extensions**
   1. Make waves of different colors.

XII. **Curriculum Coordinates**

Language Arts
   1. Have the children act out the story told in the experiment.
   2. Have the children tell the story in sequence.

Art
   1. Have the children draw an ocean full of waves using colored chalk on black paper.

Social Studies
   1. Have the children study the ocean.
   2. Take a field trip to the coast and watch the waves roll in.



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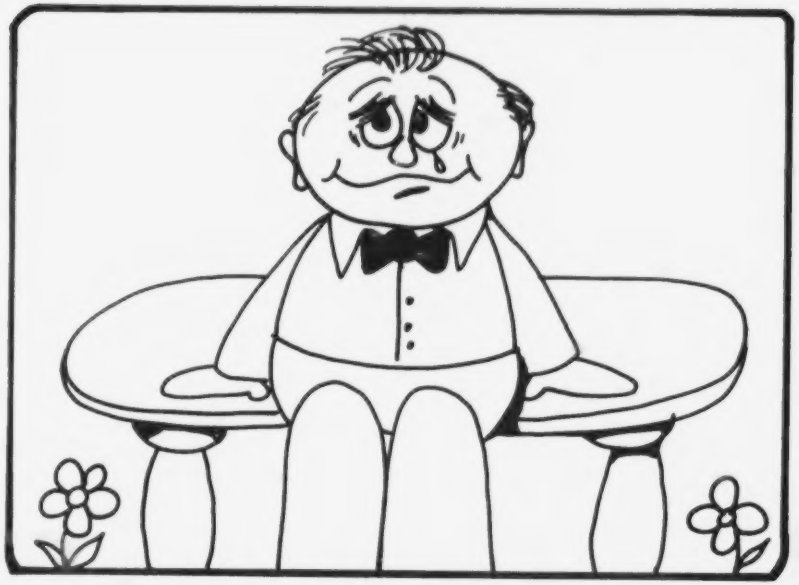
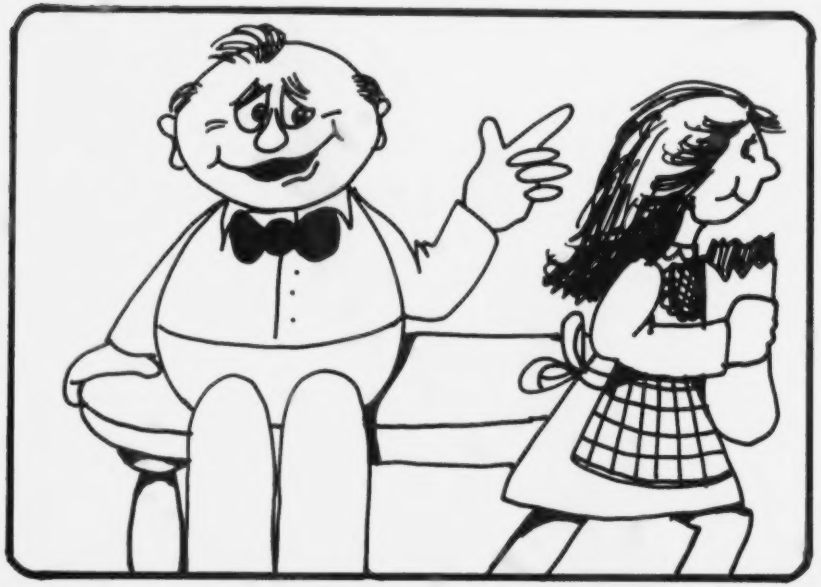


Blue Wave Sequence Page - Cut out and paste down in order.



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